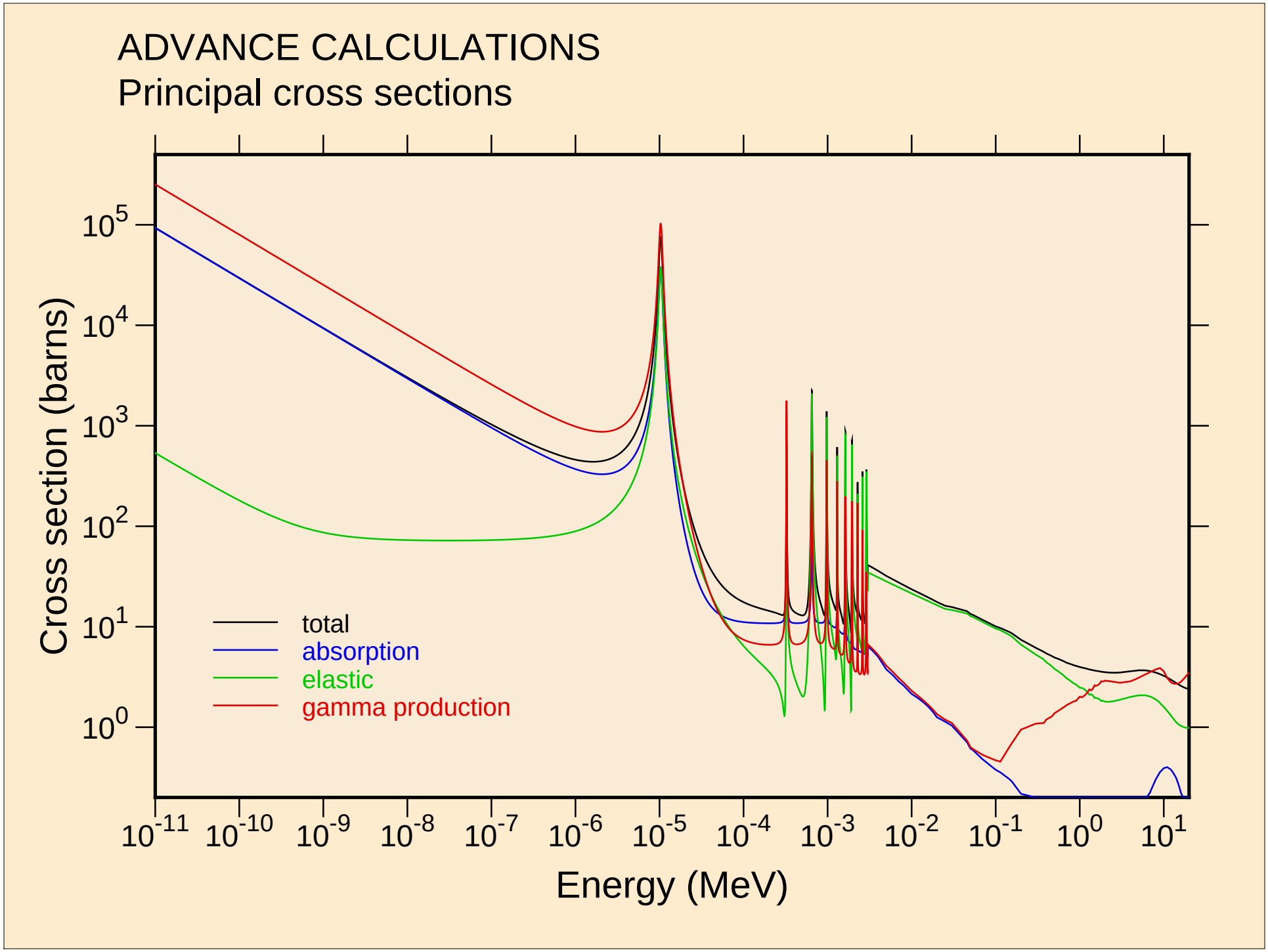
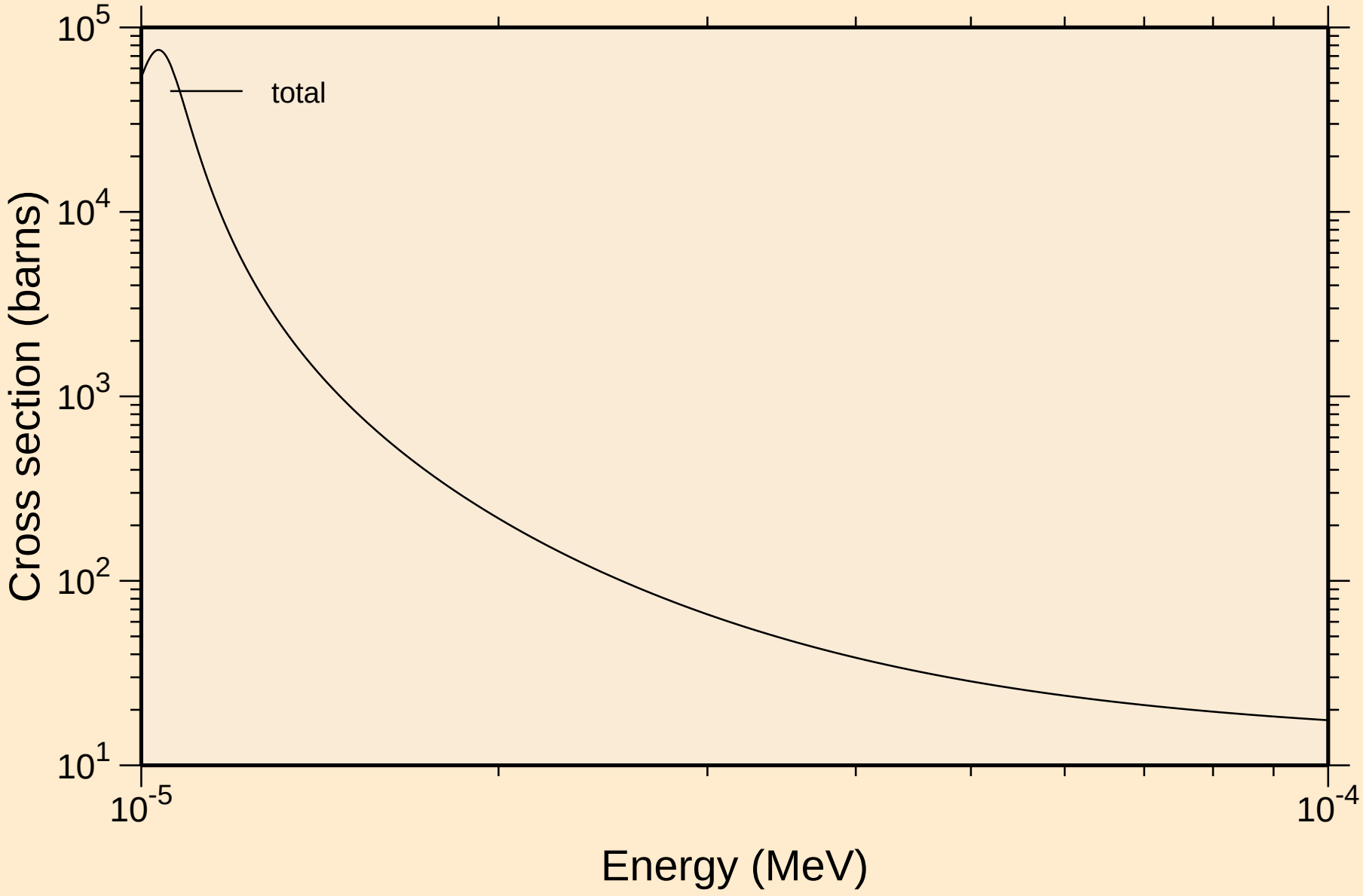
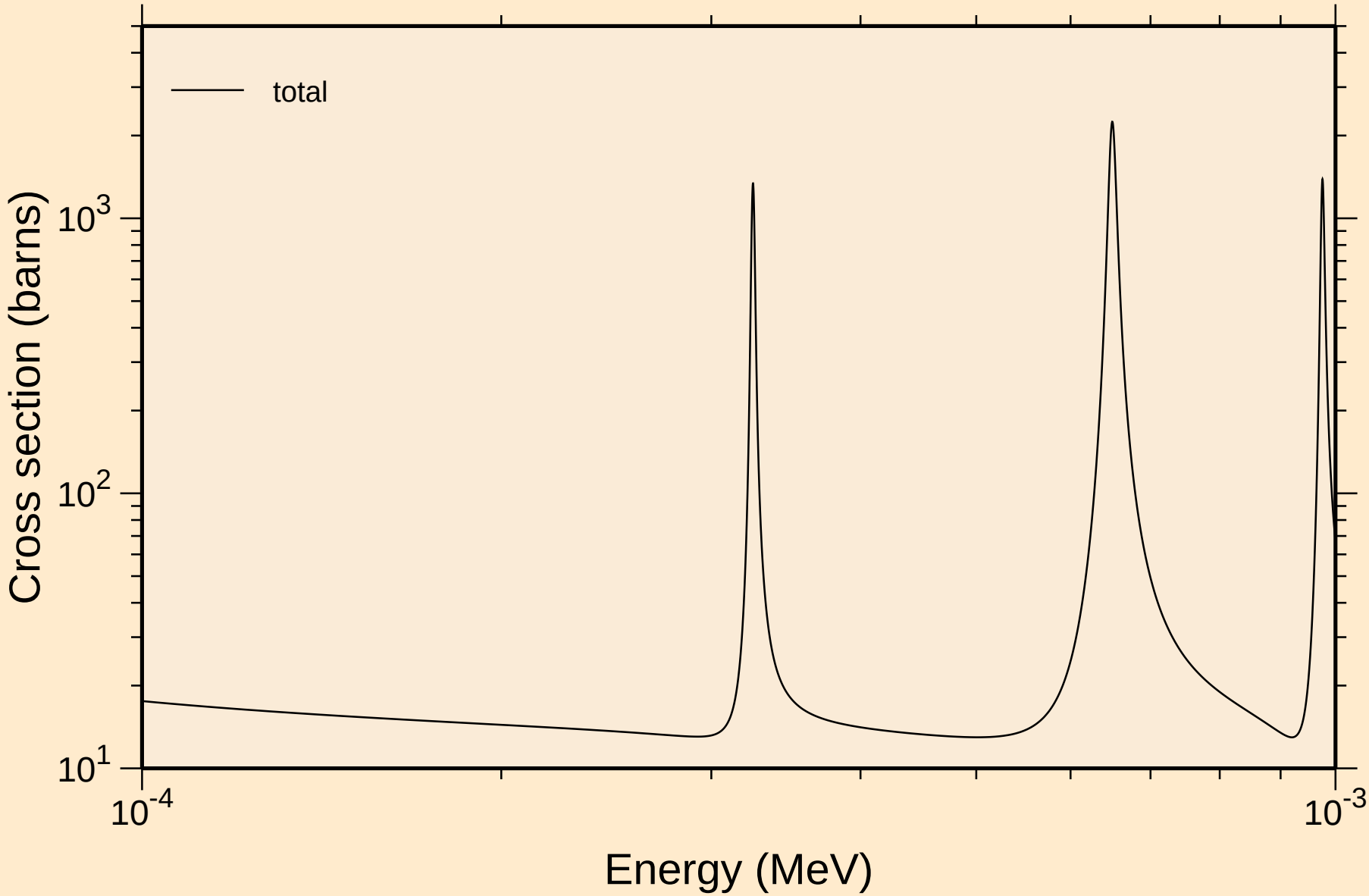

ADVANCE CALCULATIONS
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production

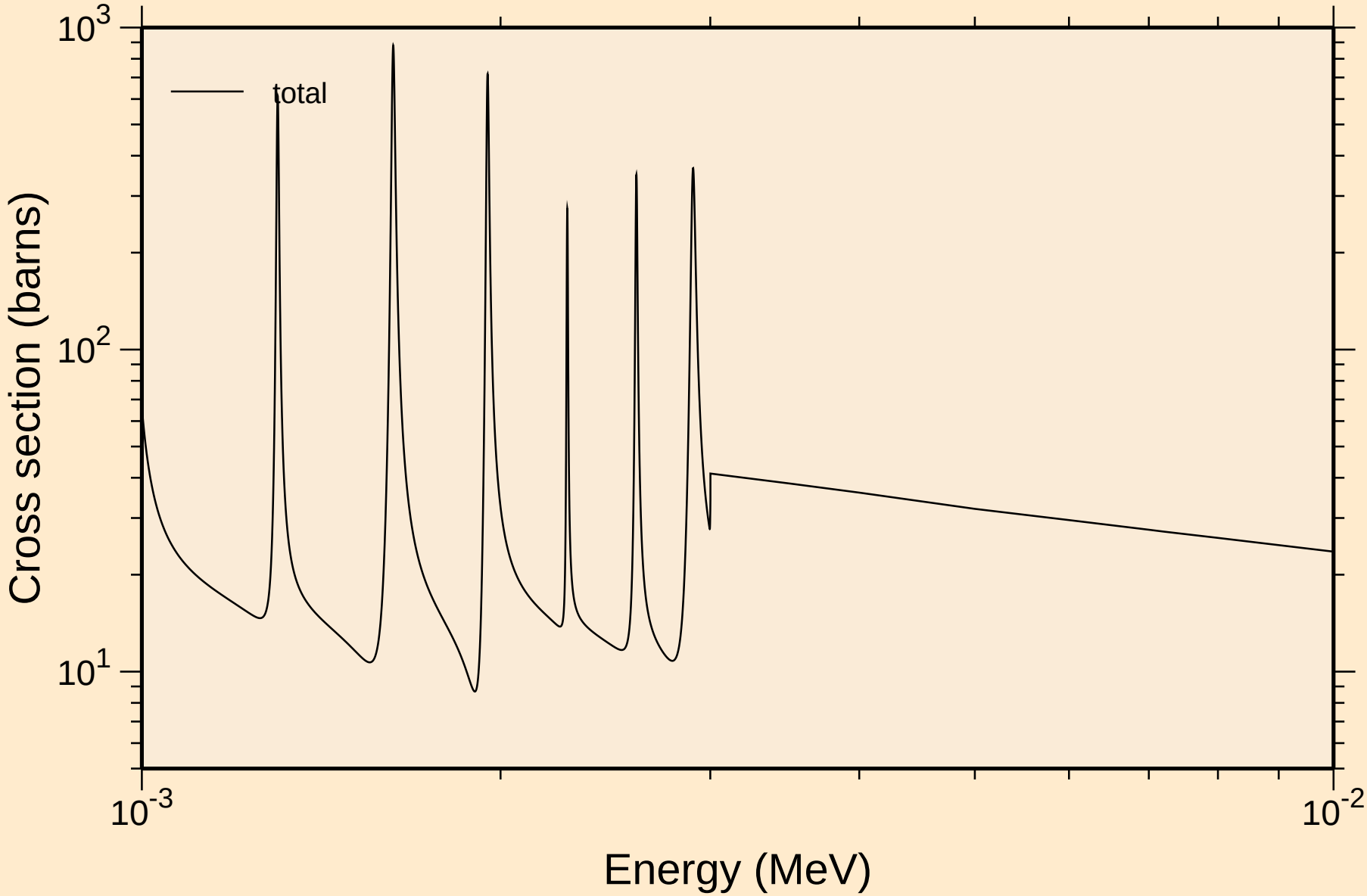
ADVANCE CALCULATIONS
resonance total cross section



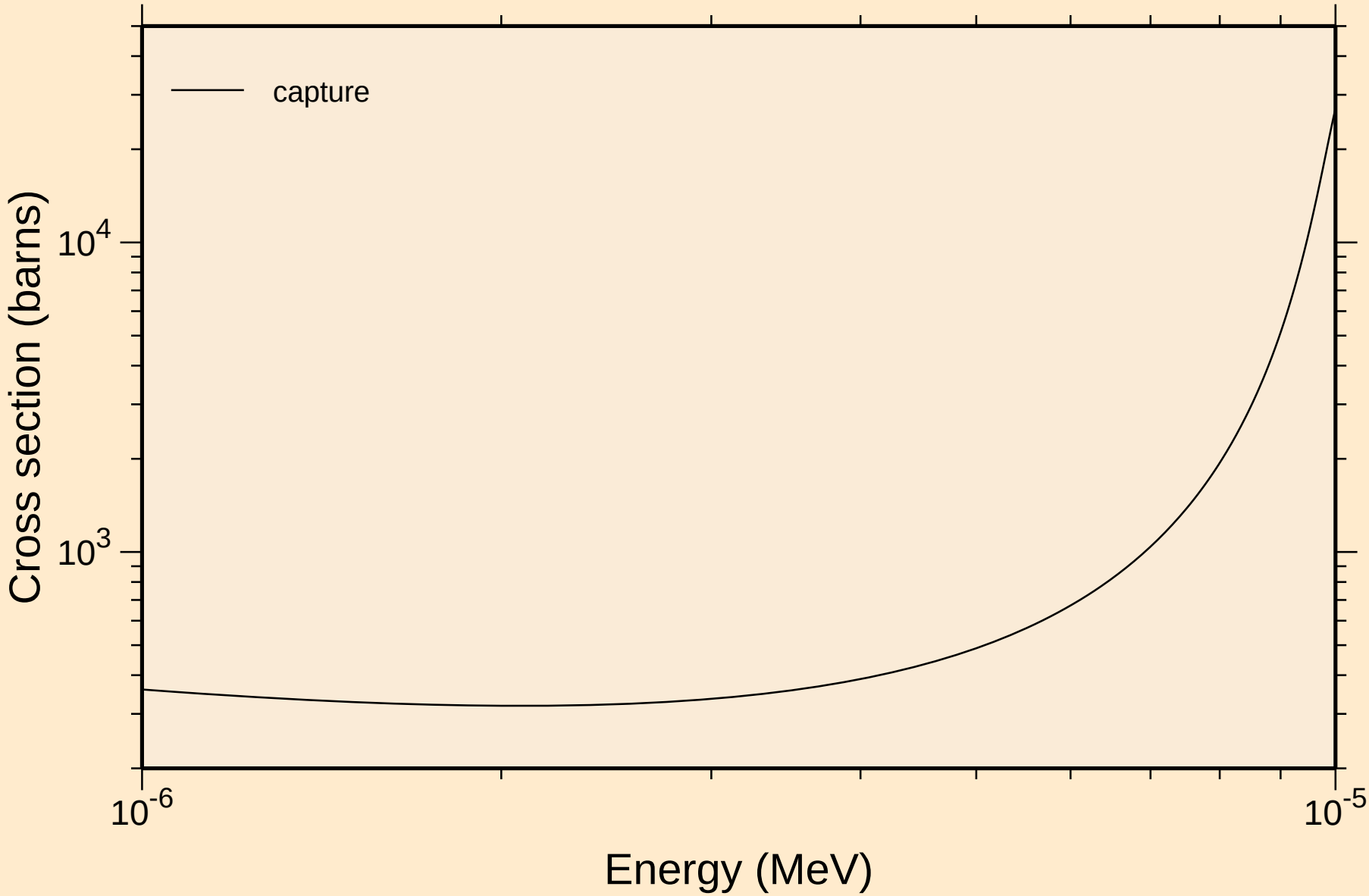
ADVANCE CALCULATIONS
resonance total cross section



ADVANCE CALCULATIONS
resonance total cross section

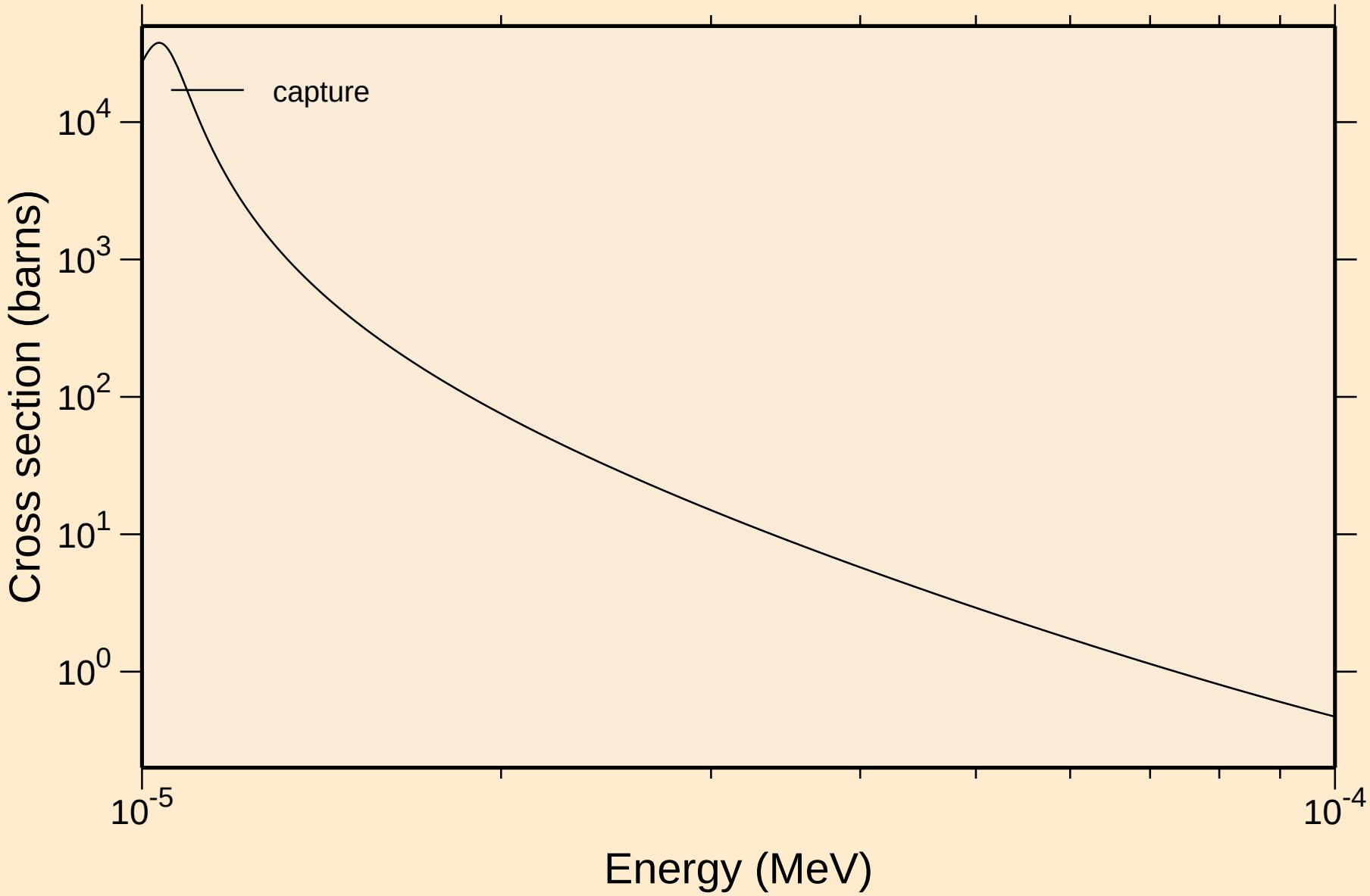


ADVANCE CALCULATIONS
resonance absorption cross sections



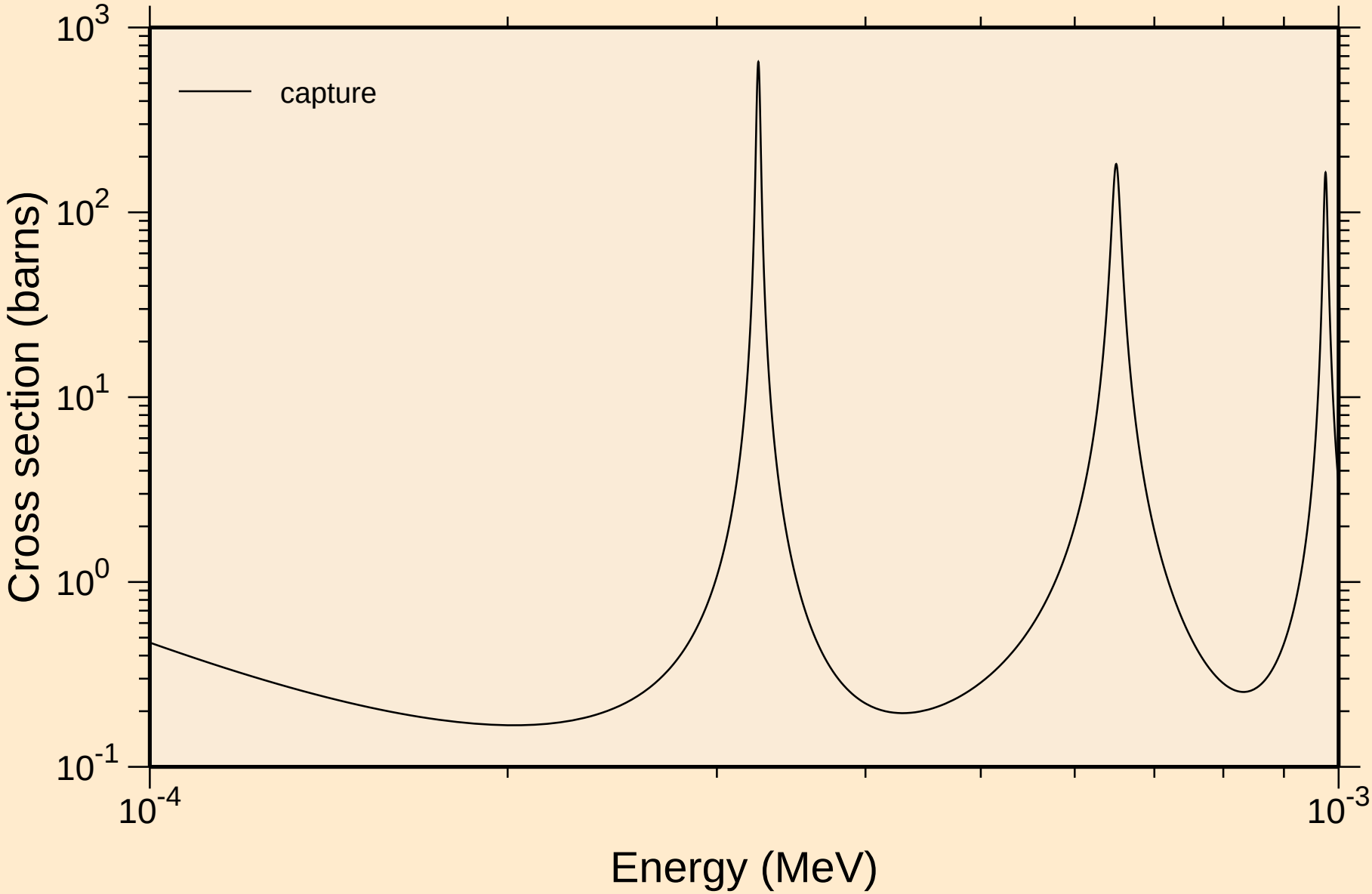
ADVANCE CALCULATIONS

resonance absorption cross sections



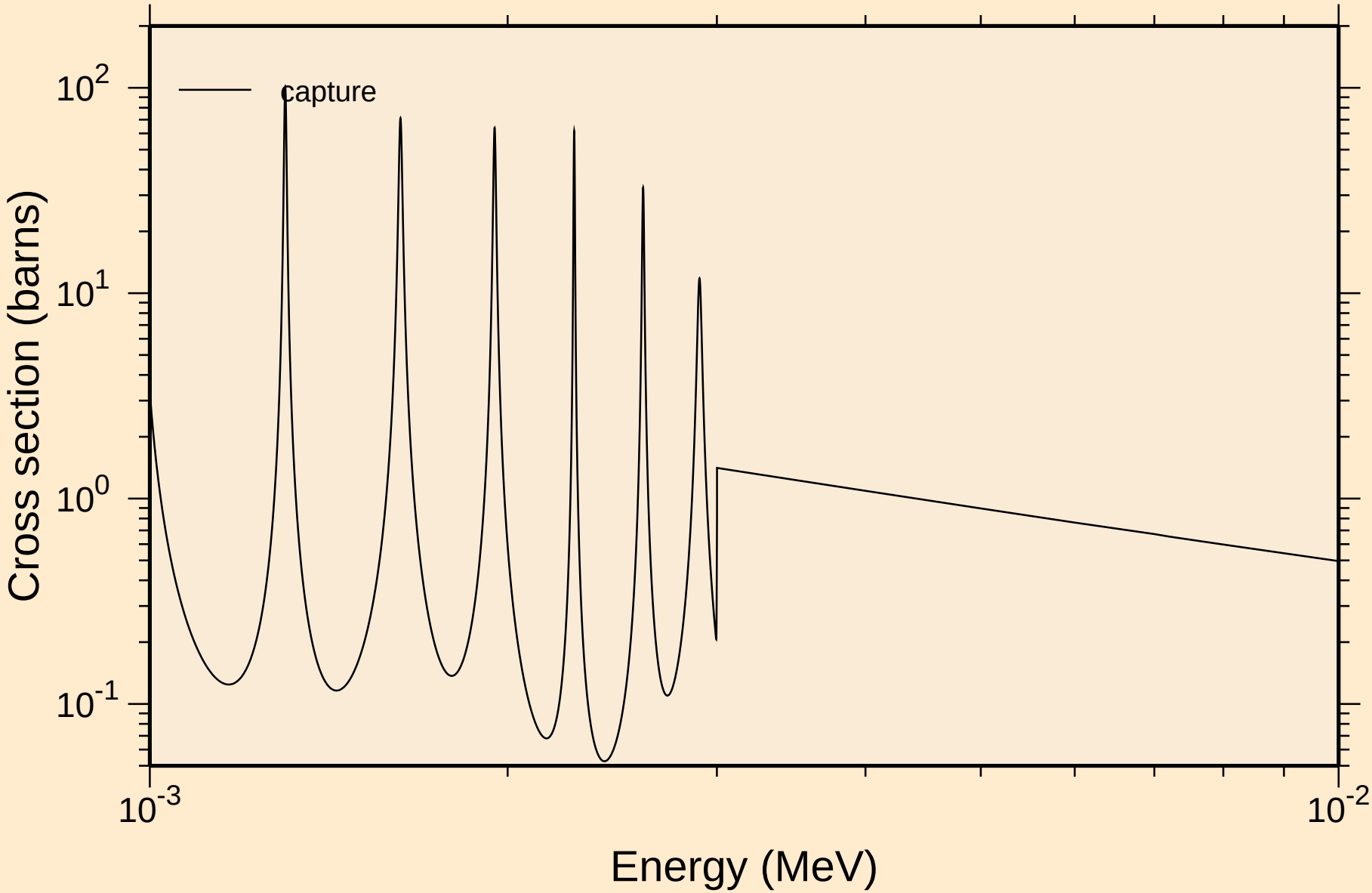
ADVANCE CALCULATIONS

resonance absorption cross sections



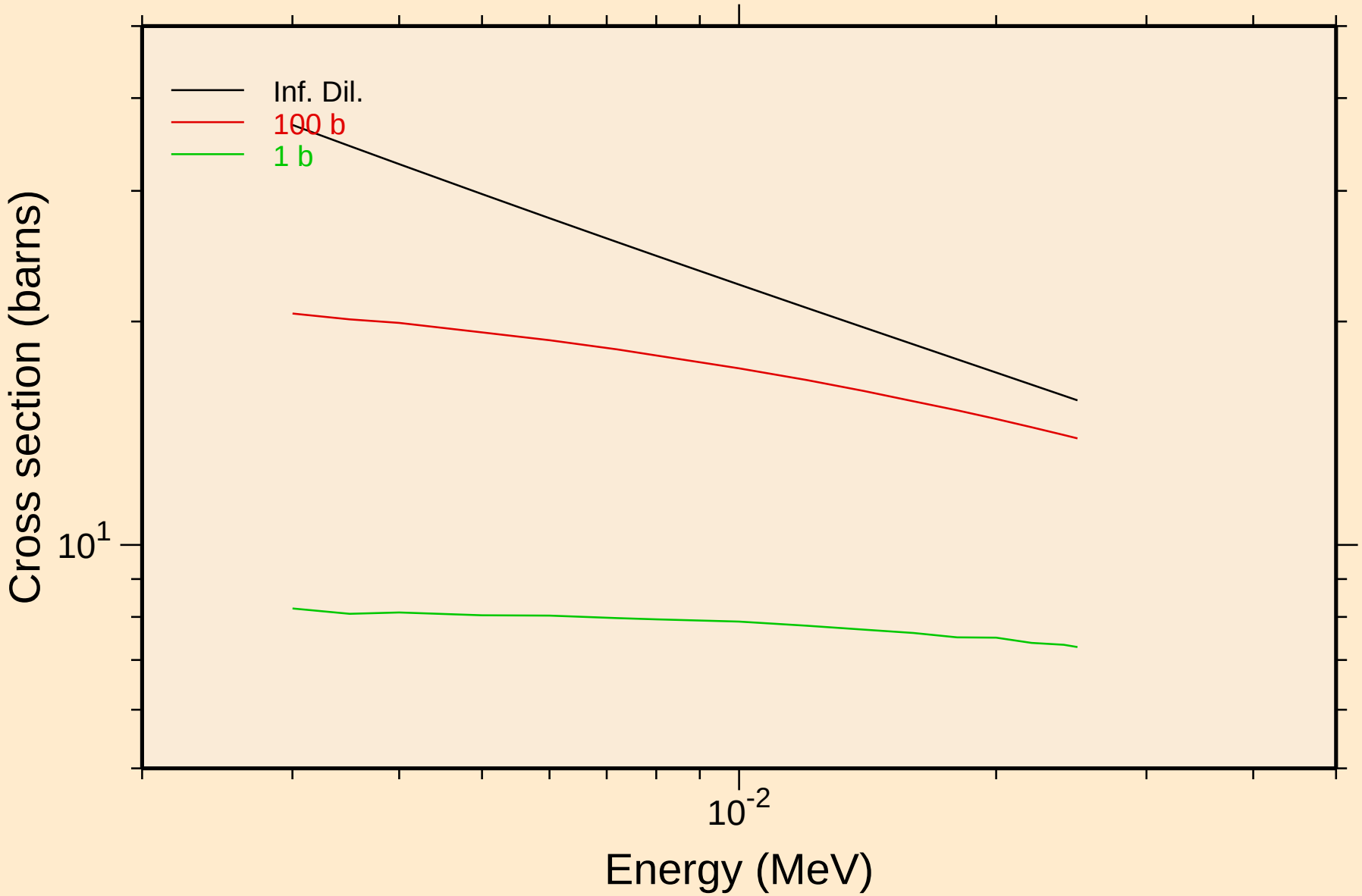
ADVANCE CALCULATIONS

resonance absorption cross sections



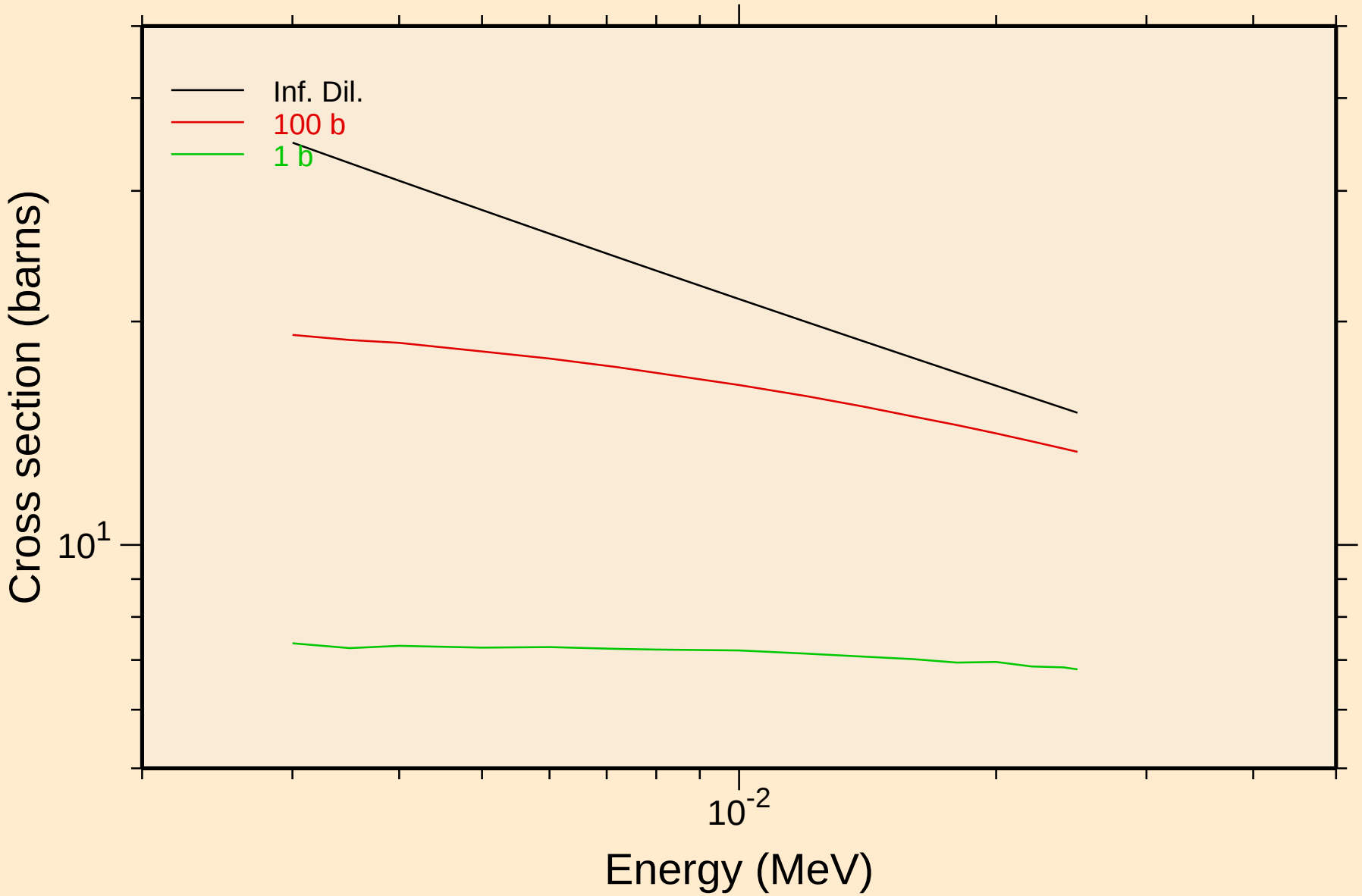
ADVANCE CALCULATIONS

UR total cross section



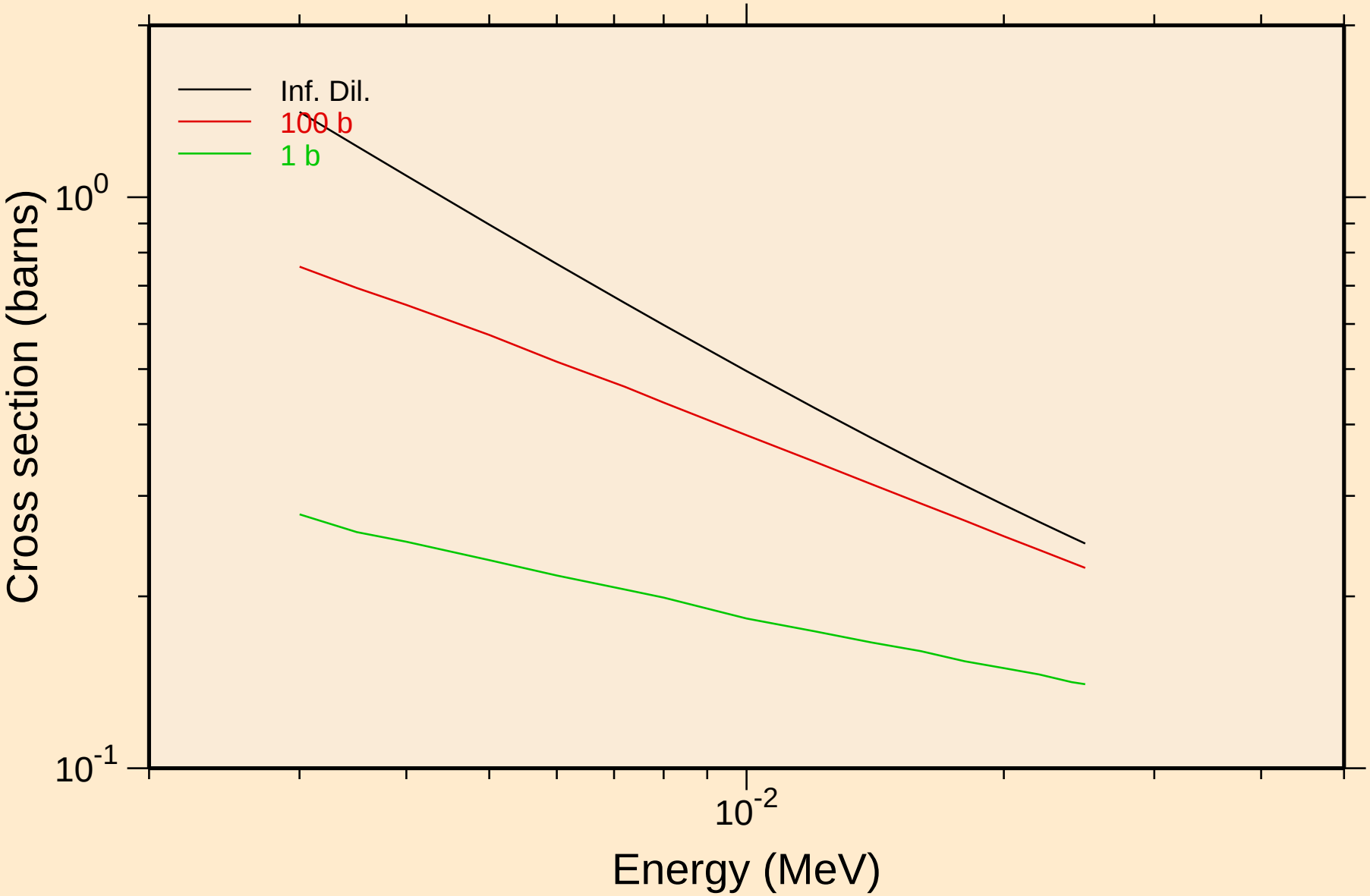
ADVANCE CALCULATIONS

UR elastic cross section

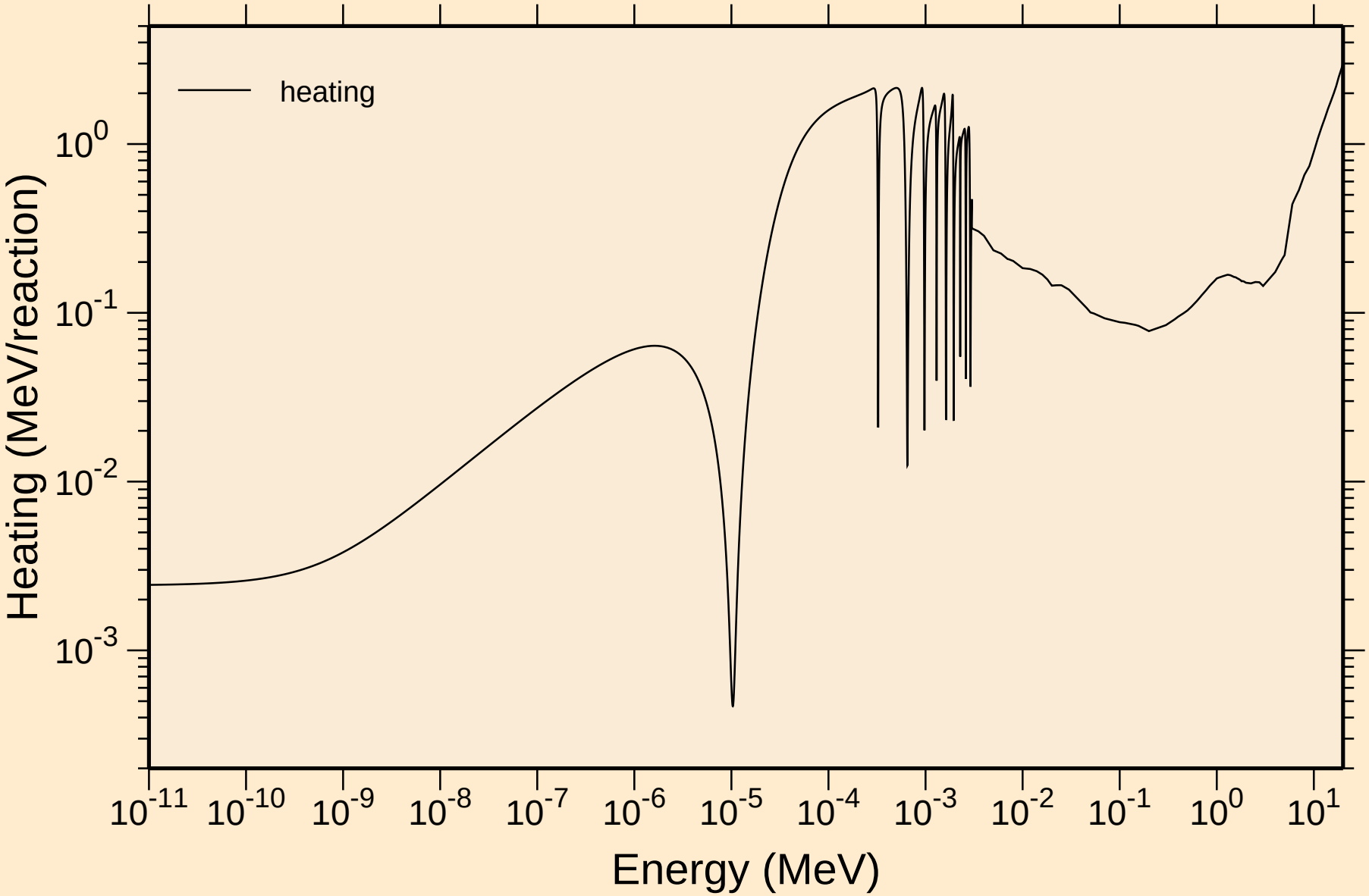


ADVANCE CALCULATIONS

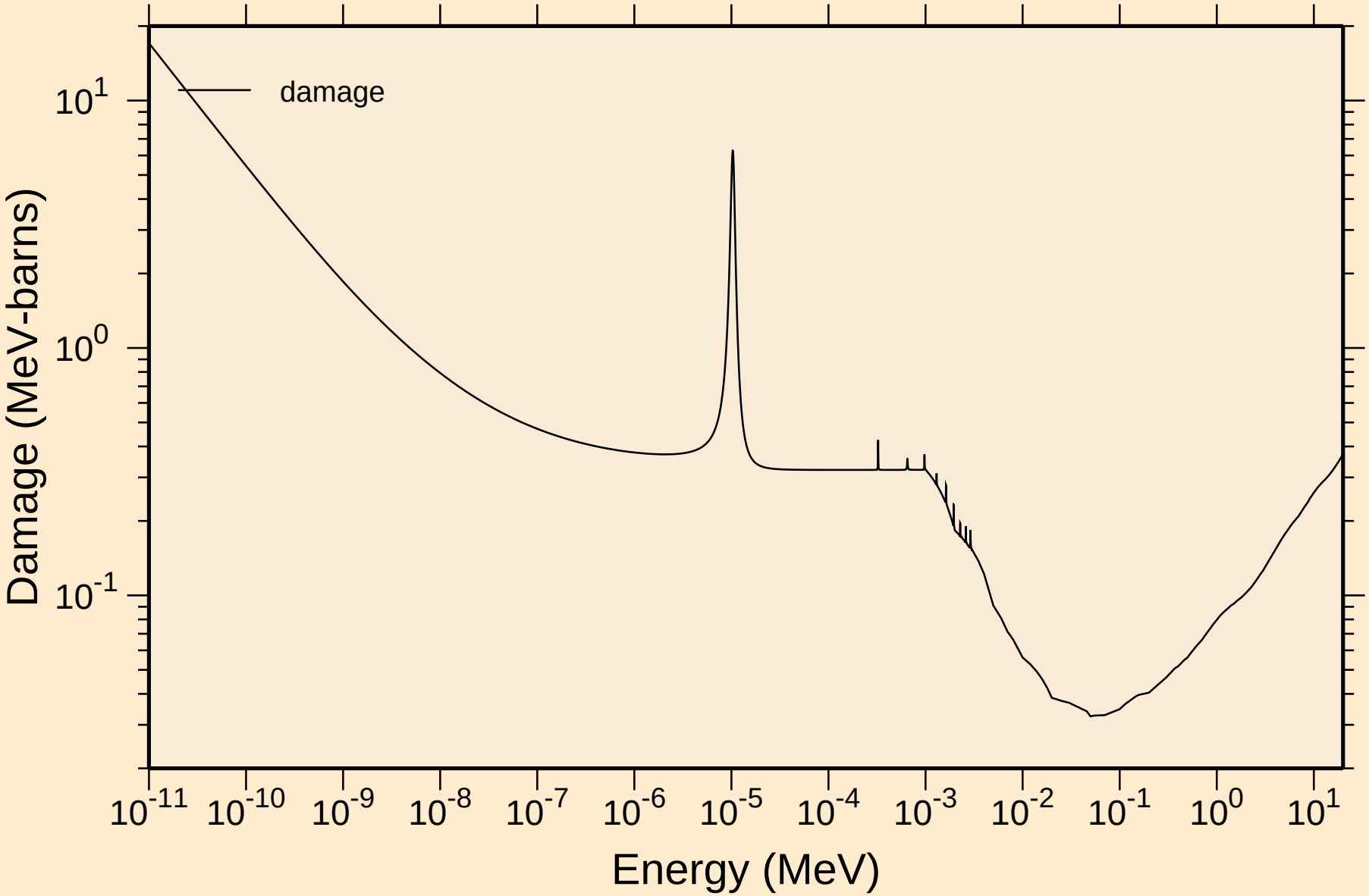
UR capture cross section



# ADVANCE CALCULATIONS
## Heating

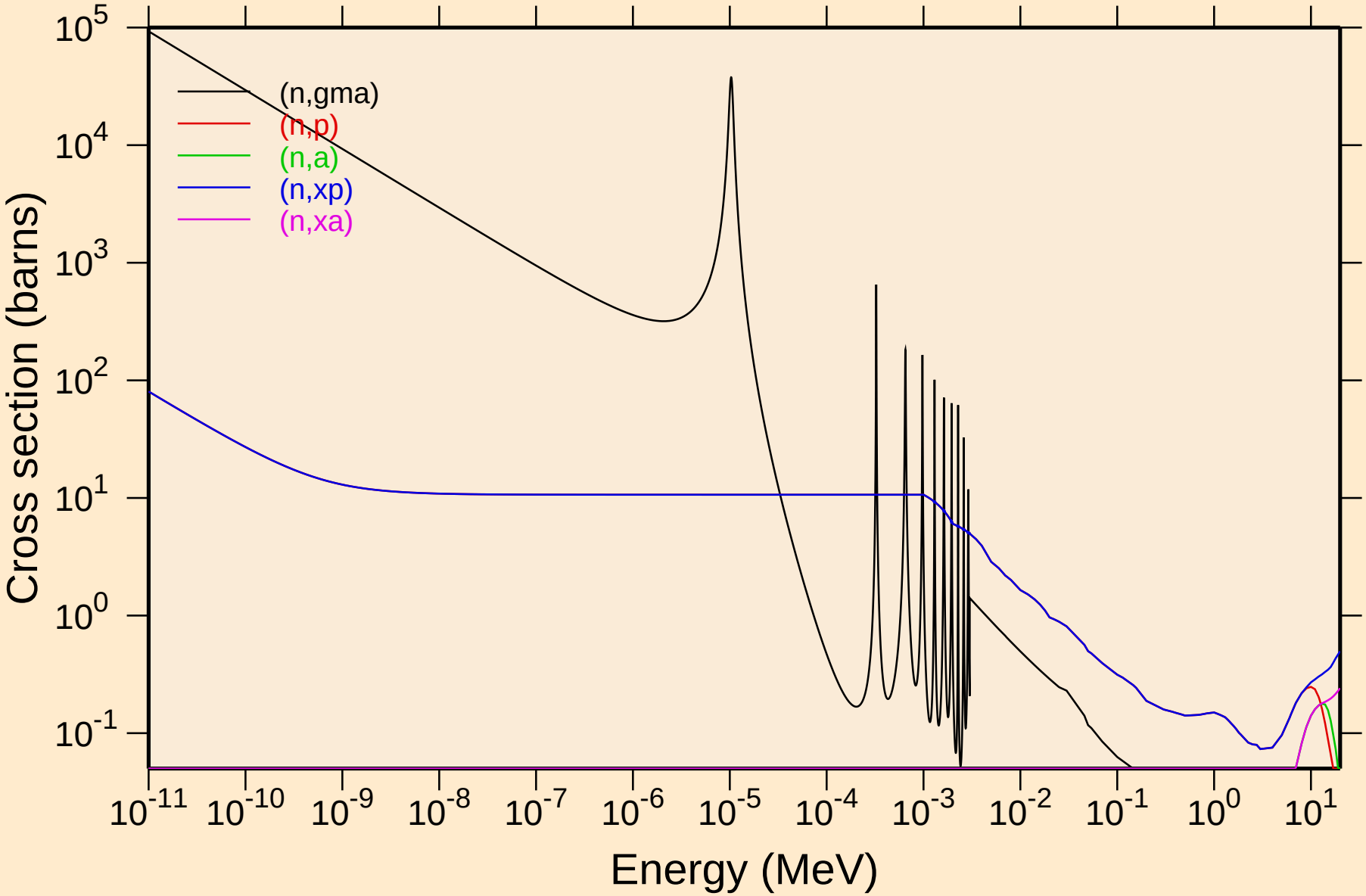


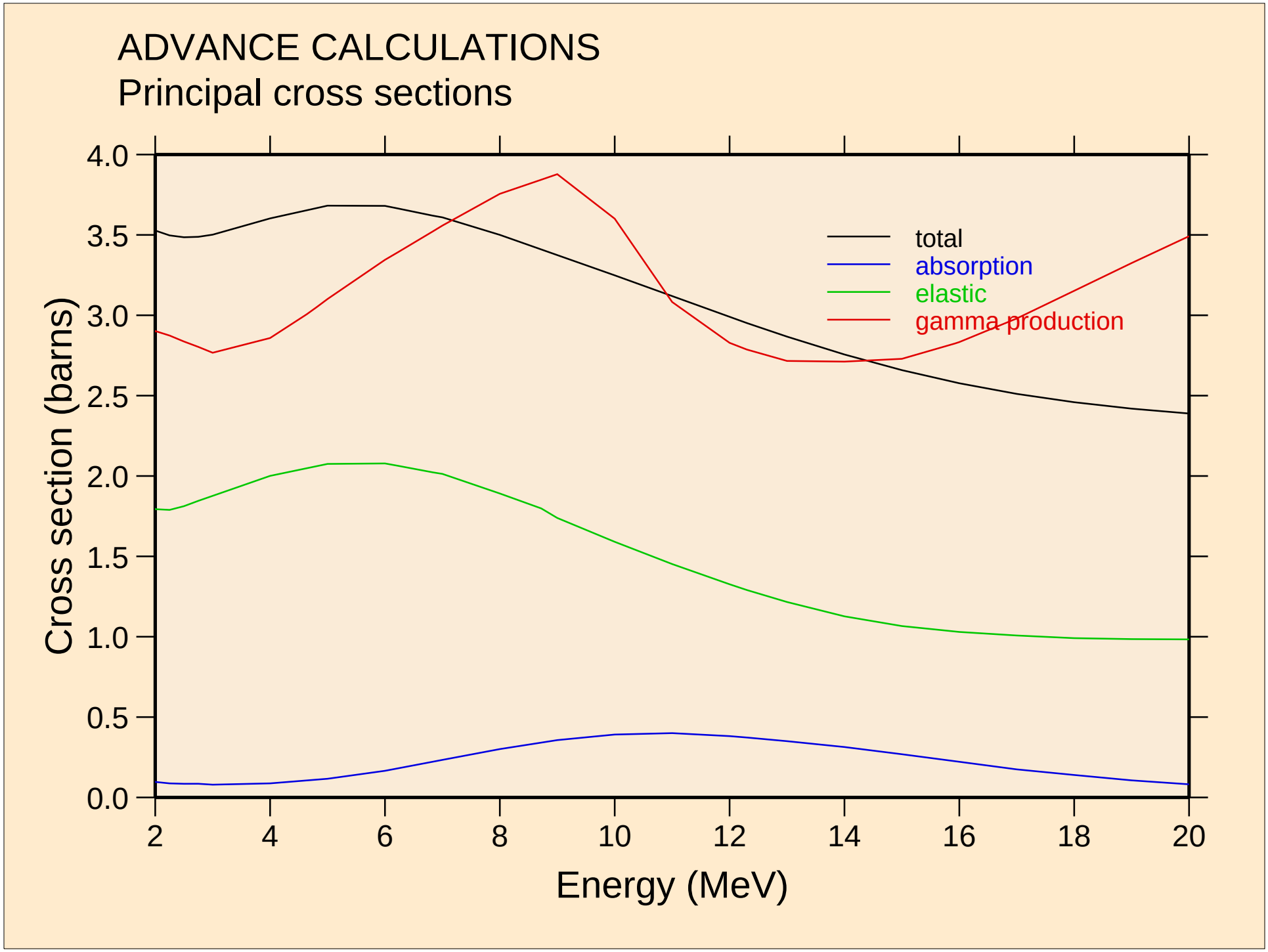
# ADVANCE CALCULATIONS
## Damage



ADVANCE CALCULATIONS

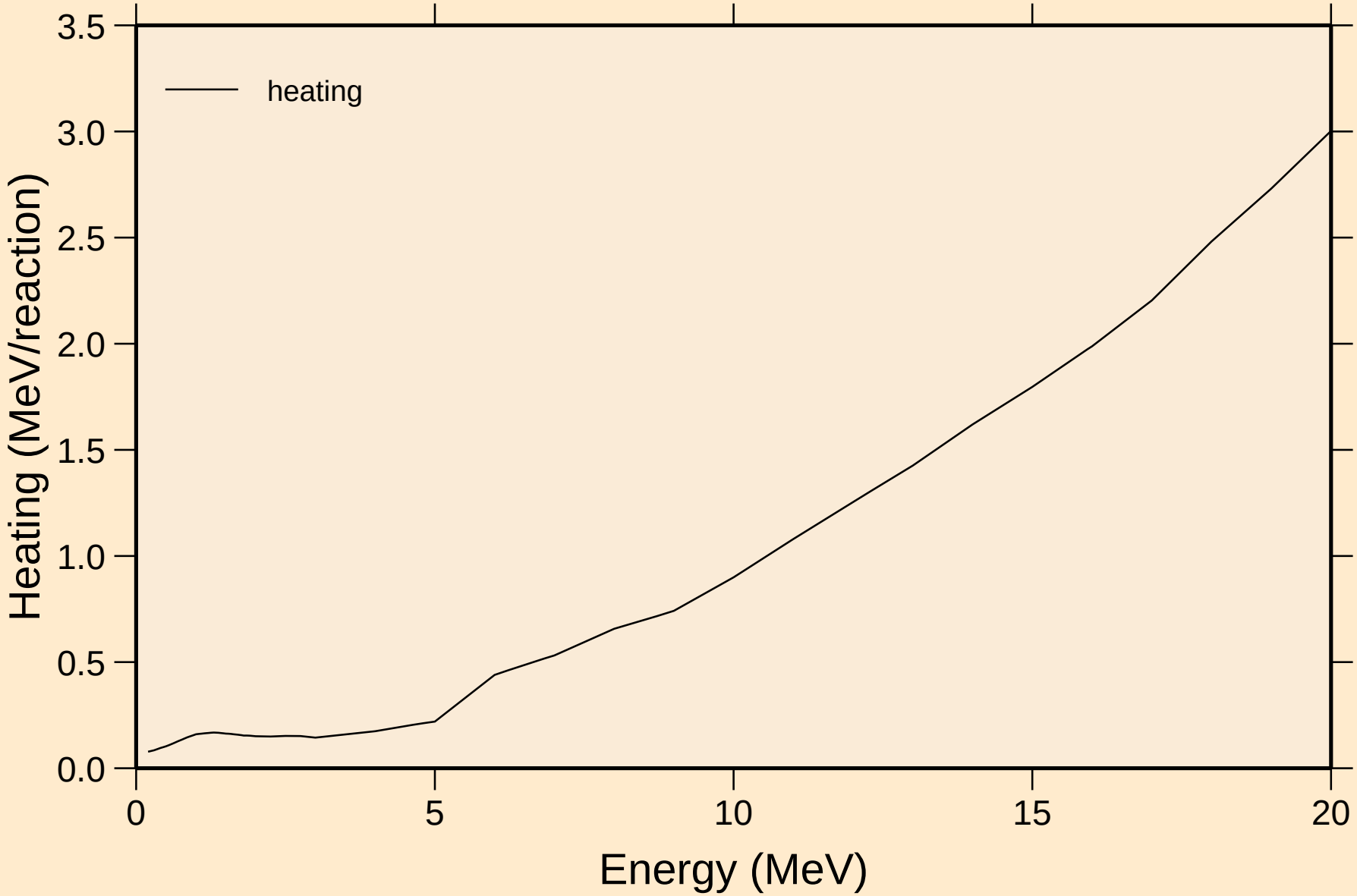
Non-threshold reactions




ADVANCE CALCULATIONS
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2
4
6
8
10
12
14
16
18
20

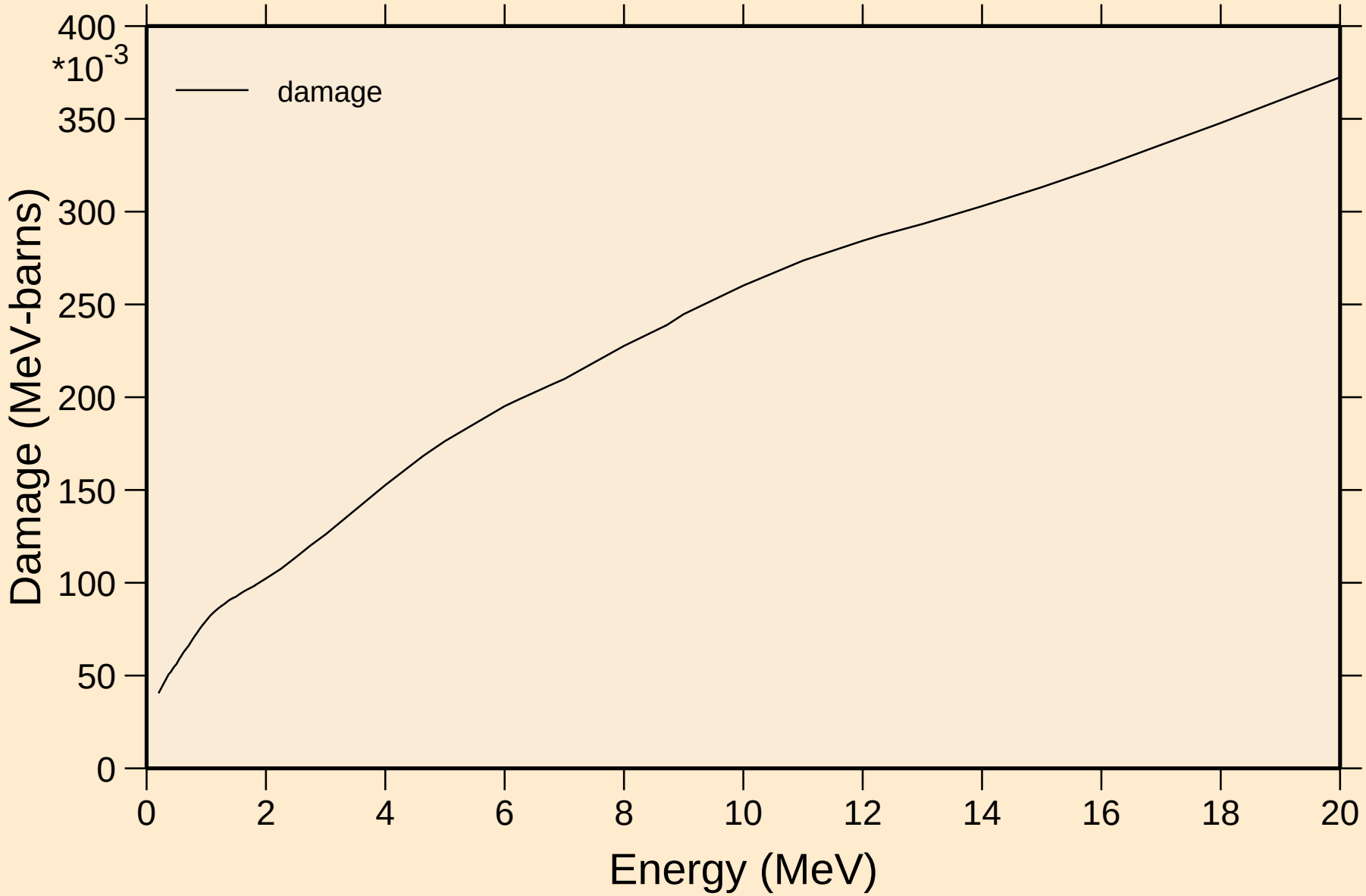
ADVANCE CALCULATIONS

Heating



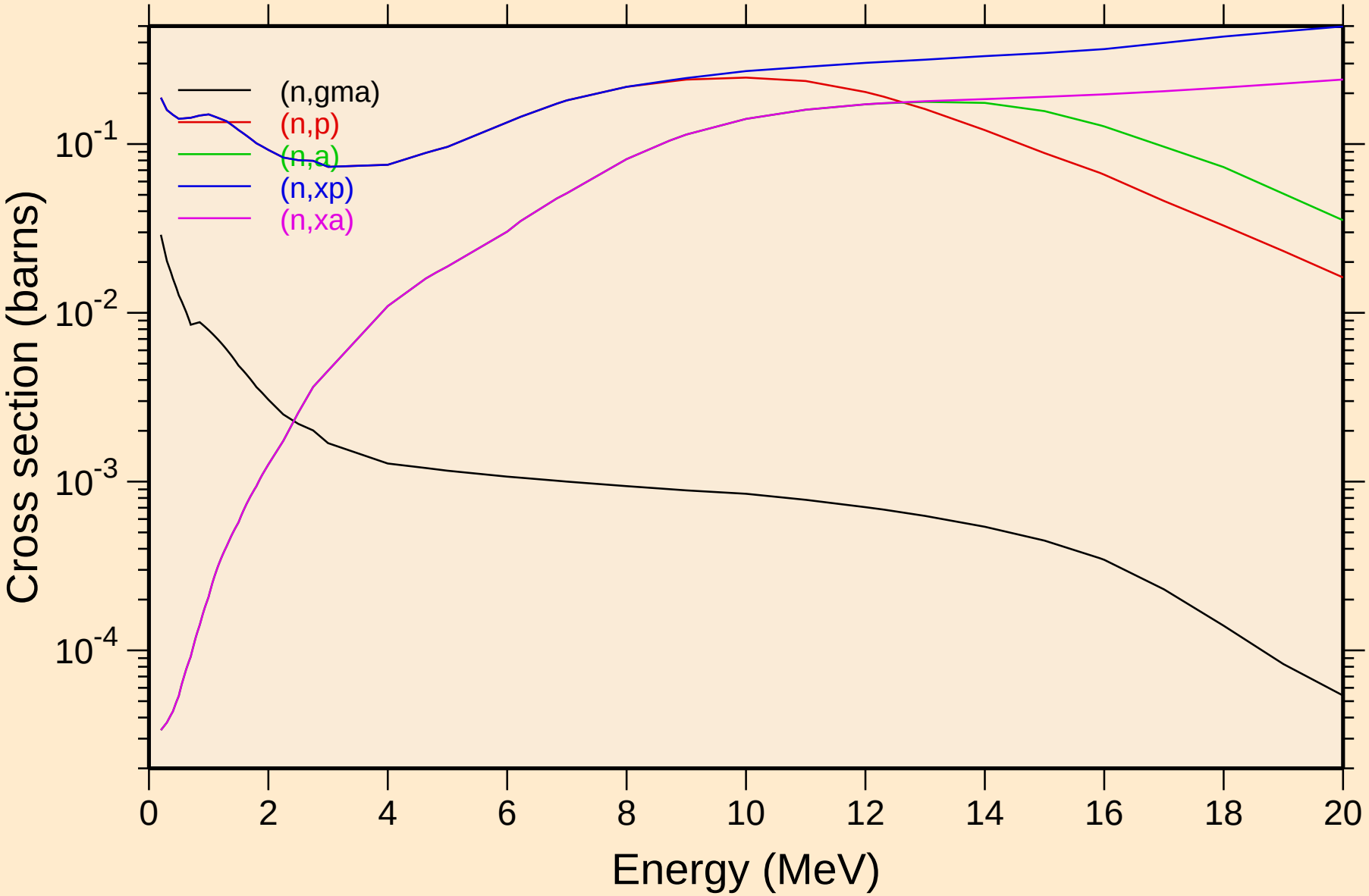
ADVANCE CALCULATIONS

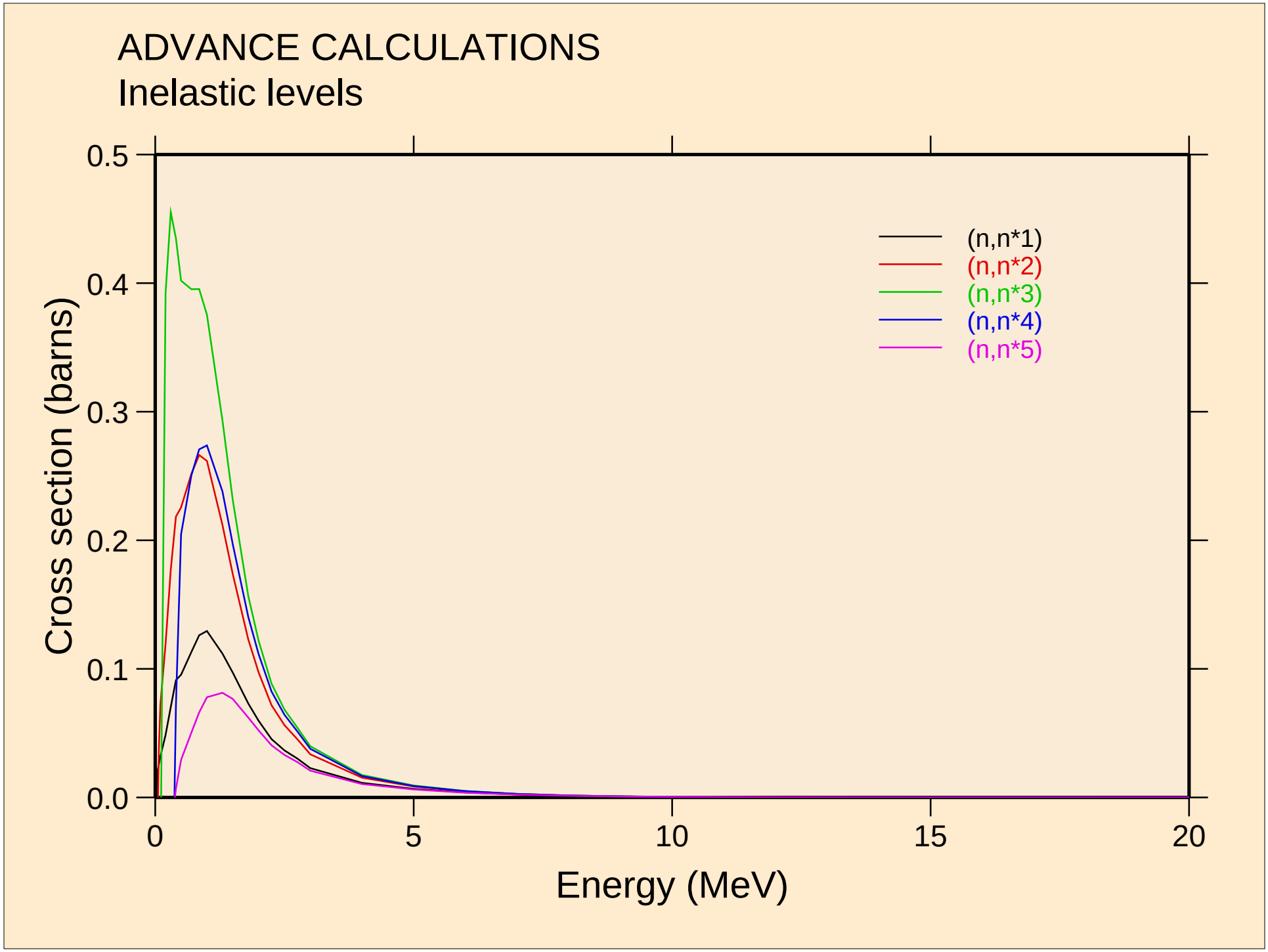
Damage



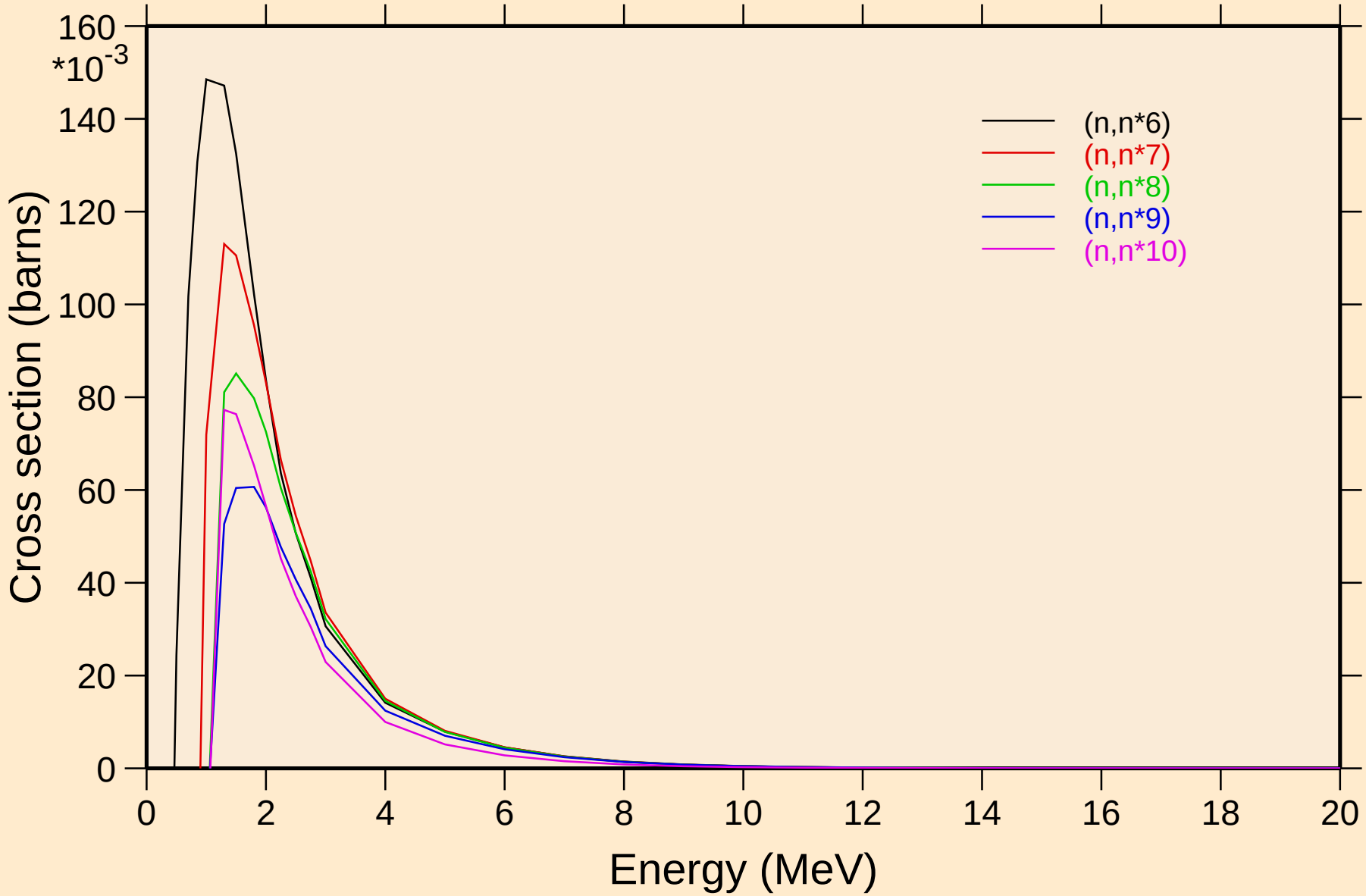
ADVANCE CALCULATIONS

Non-threshold reactions



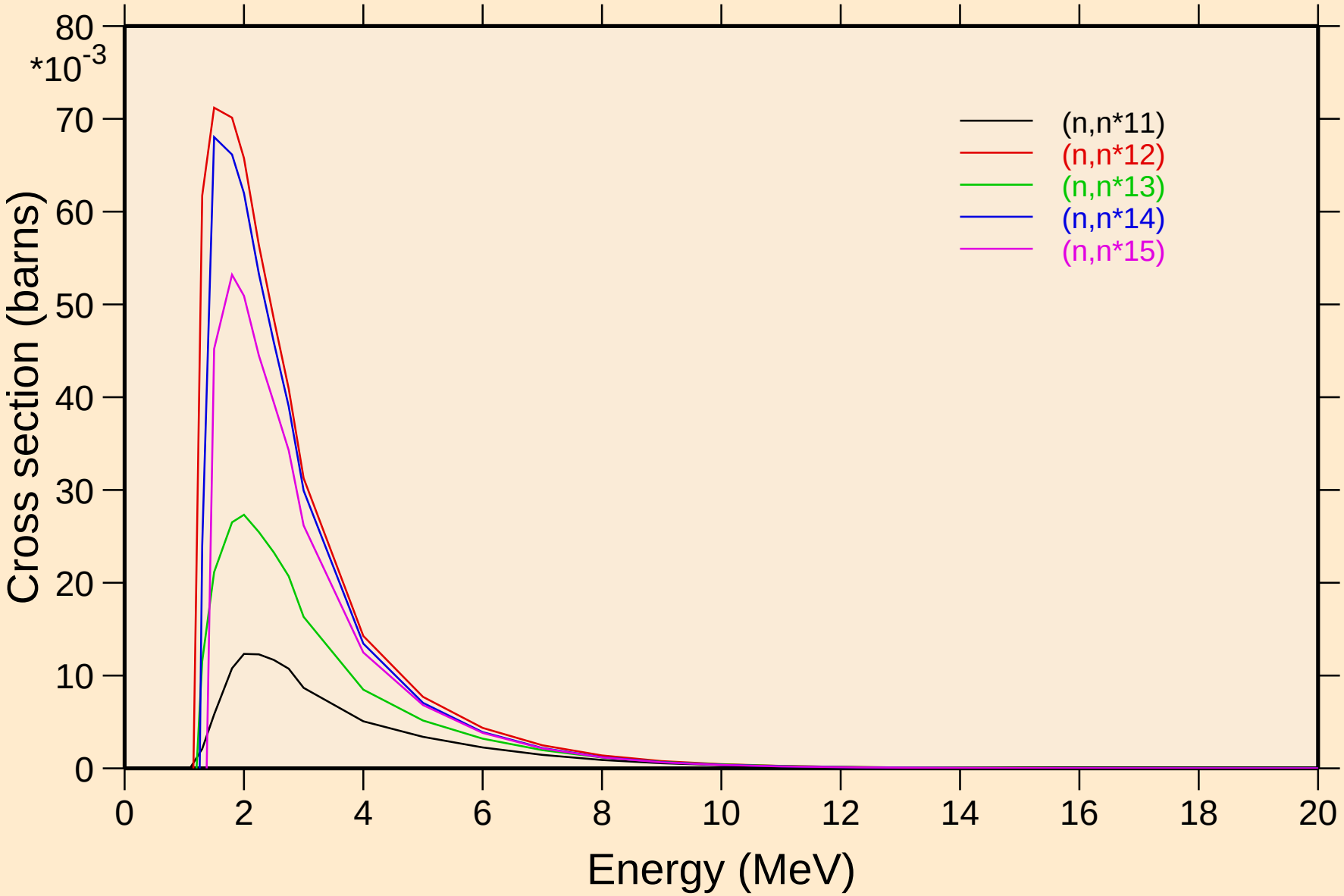

ADVANCE CALCULATIONS
Inelastic levels
Cross section (barns)
0.0
0.1
0.2
0.3
0.4
0.5
0
5
10
15
20
Energy (MeV)
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

ADVANCE CALCULATIONS
Inelastic levels



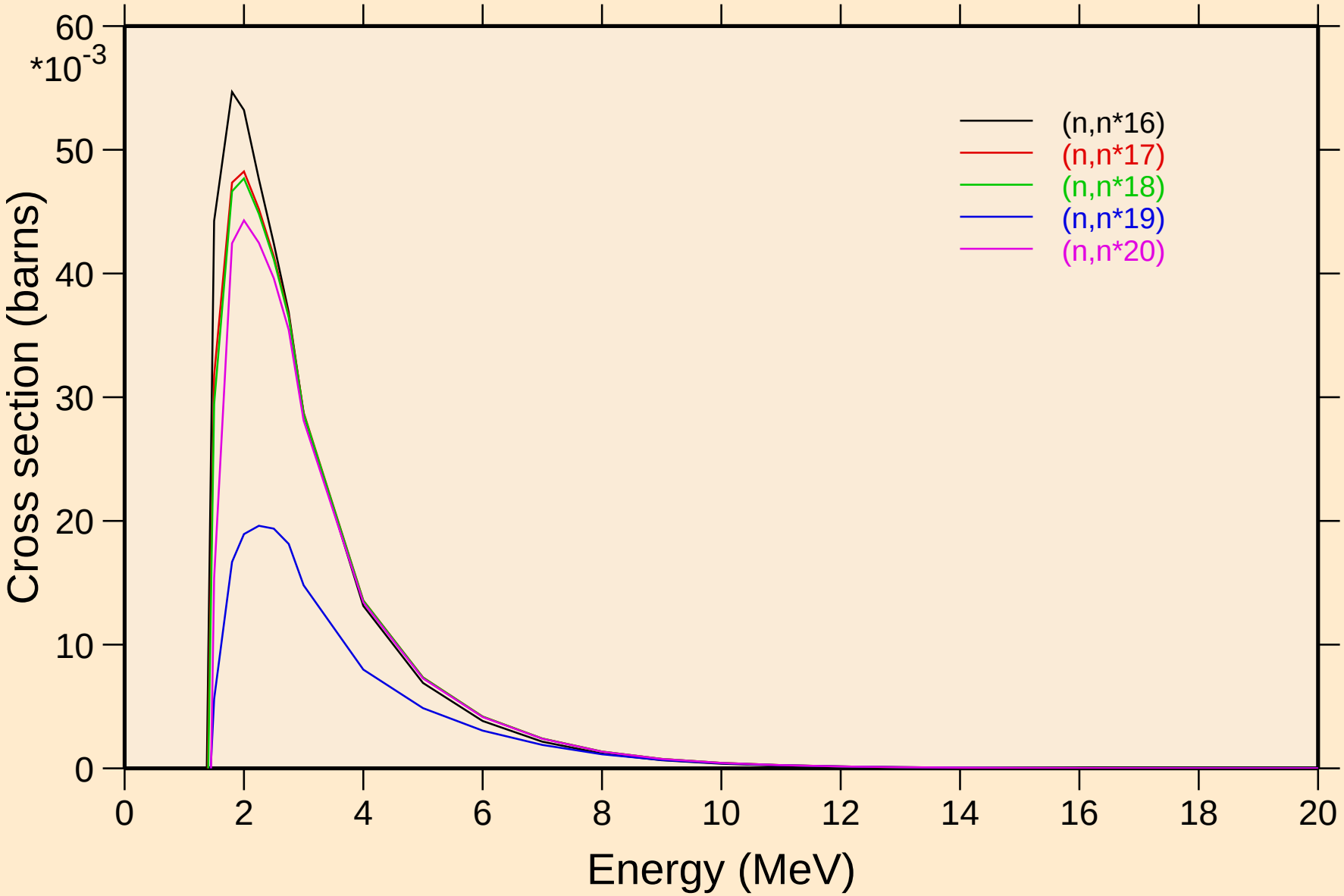
ADVANCE CALCULATIONS

Inelastic levels



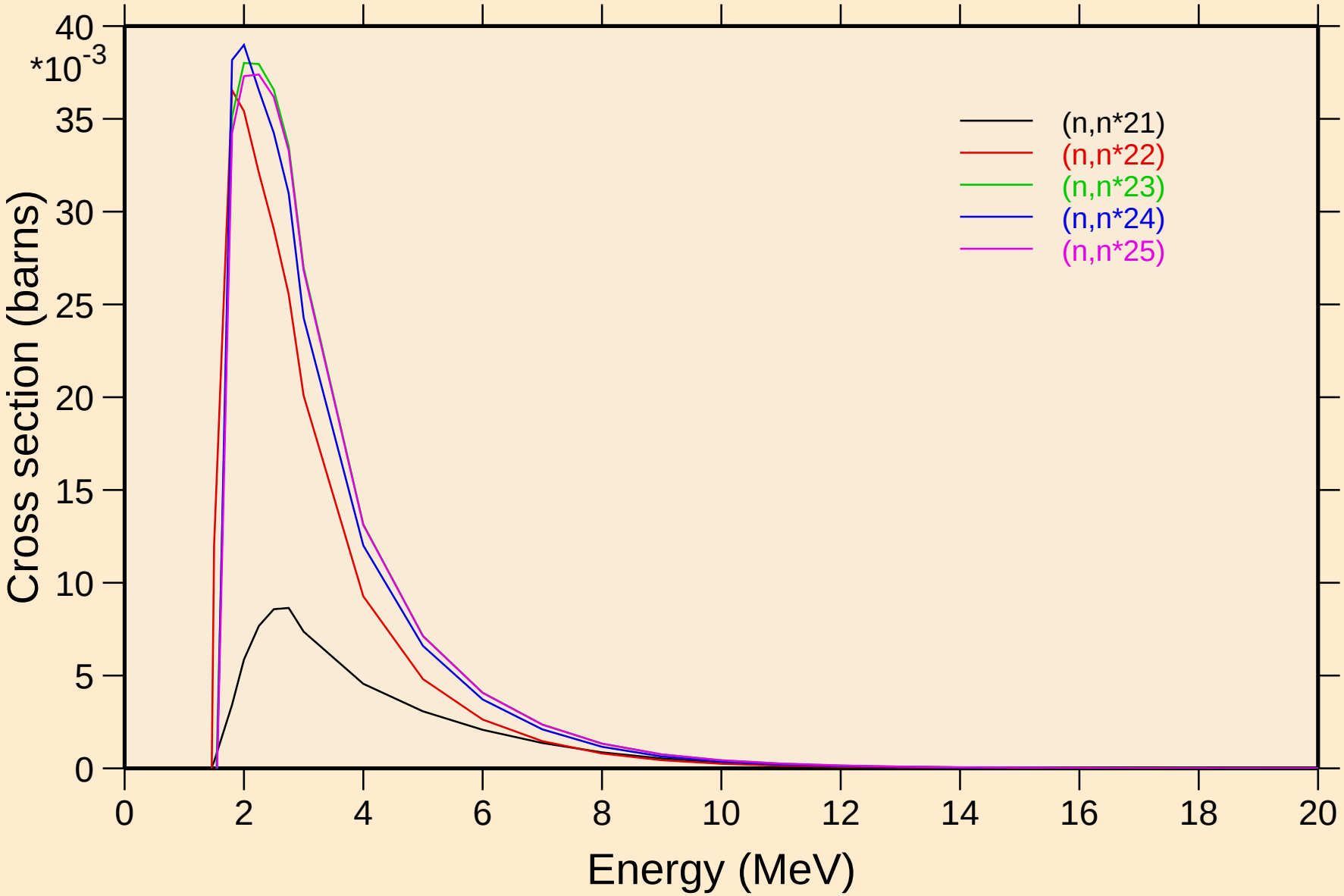
ADVANCE CALCULATIONS

Inelastic levels



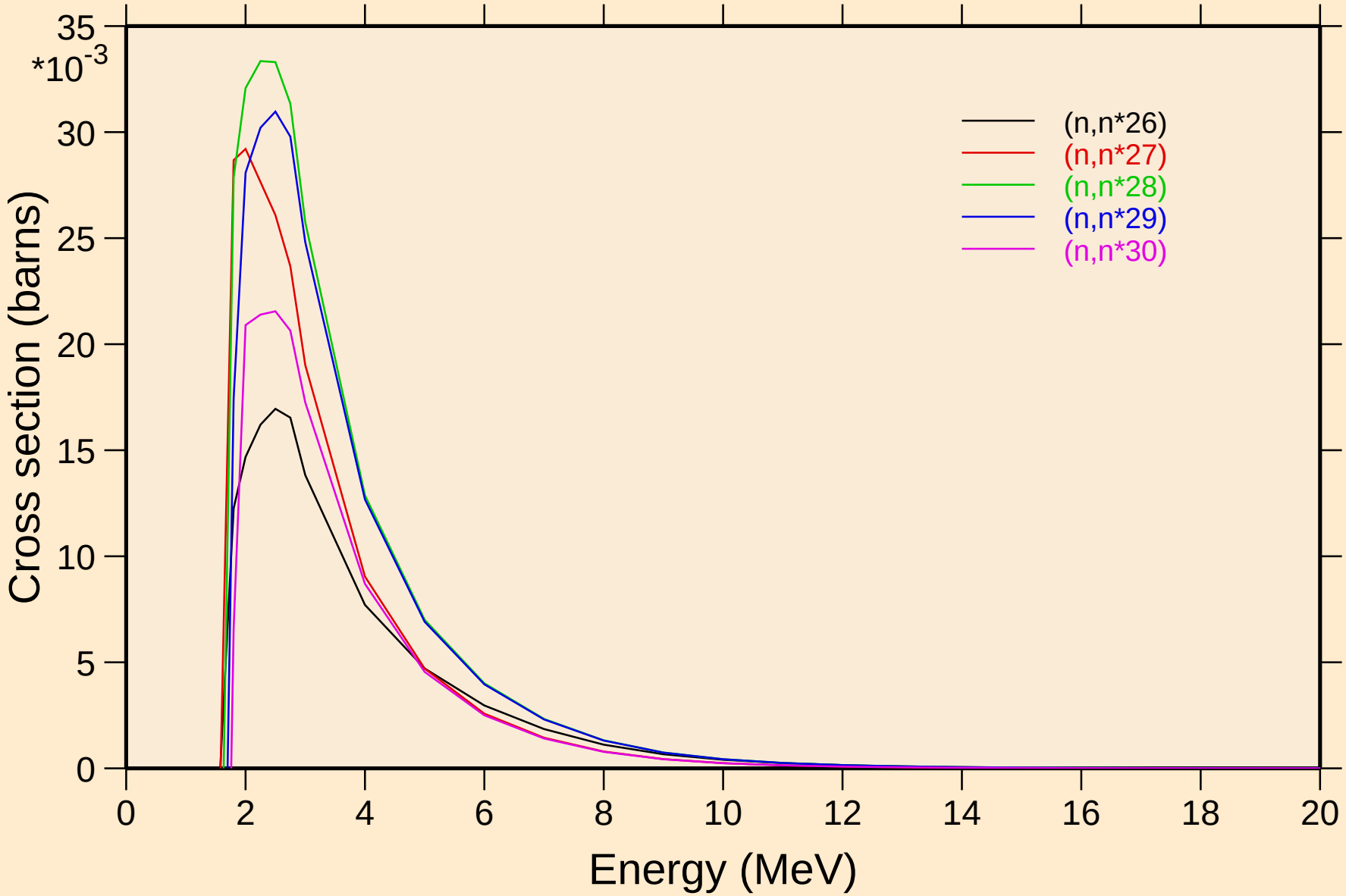
ADVANCE CALCULATIONS

Inelastic levels

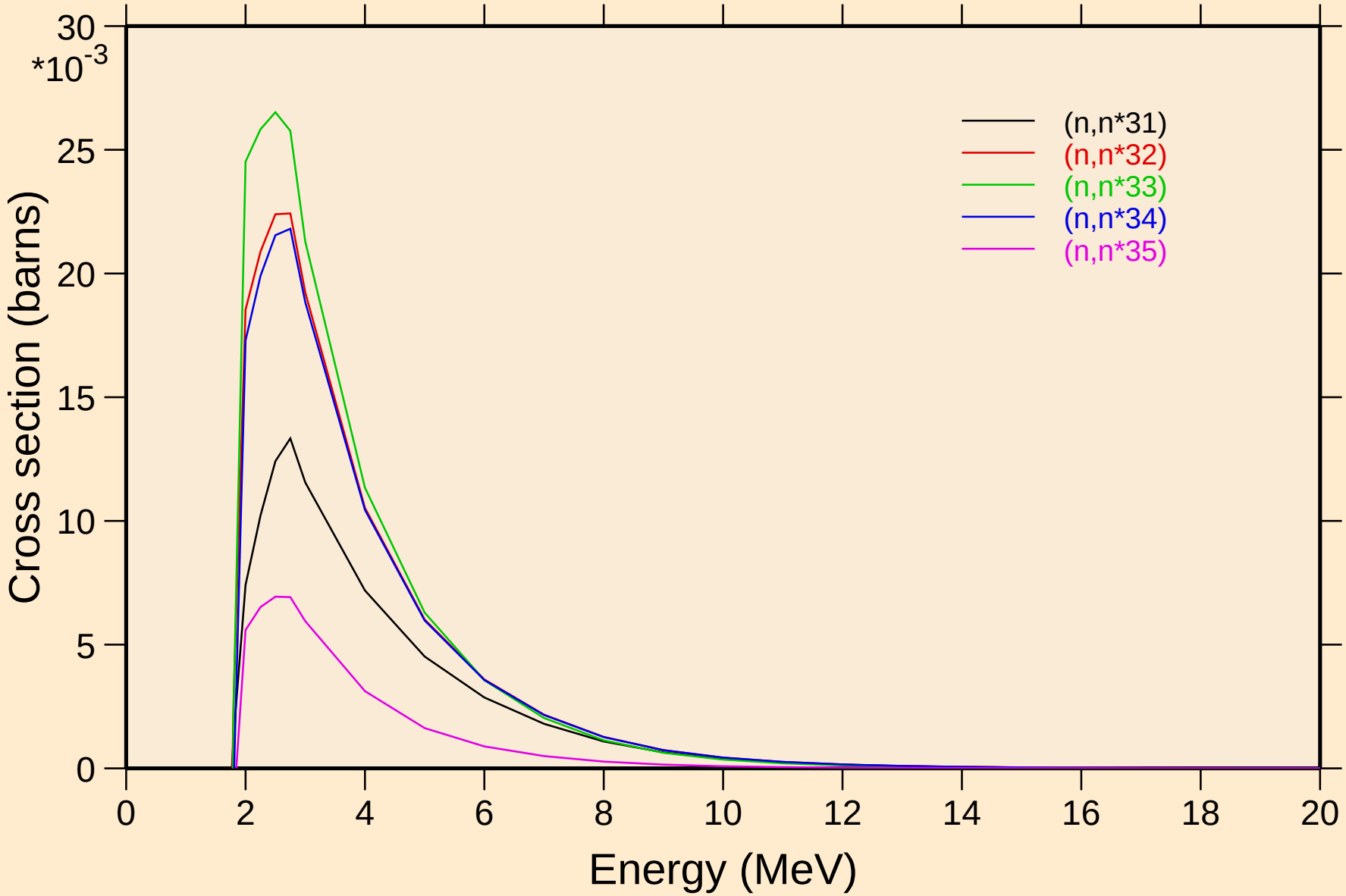


ADVANCE CALCULATIONS

Inelastic levels

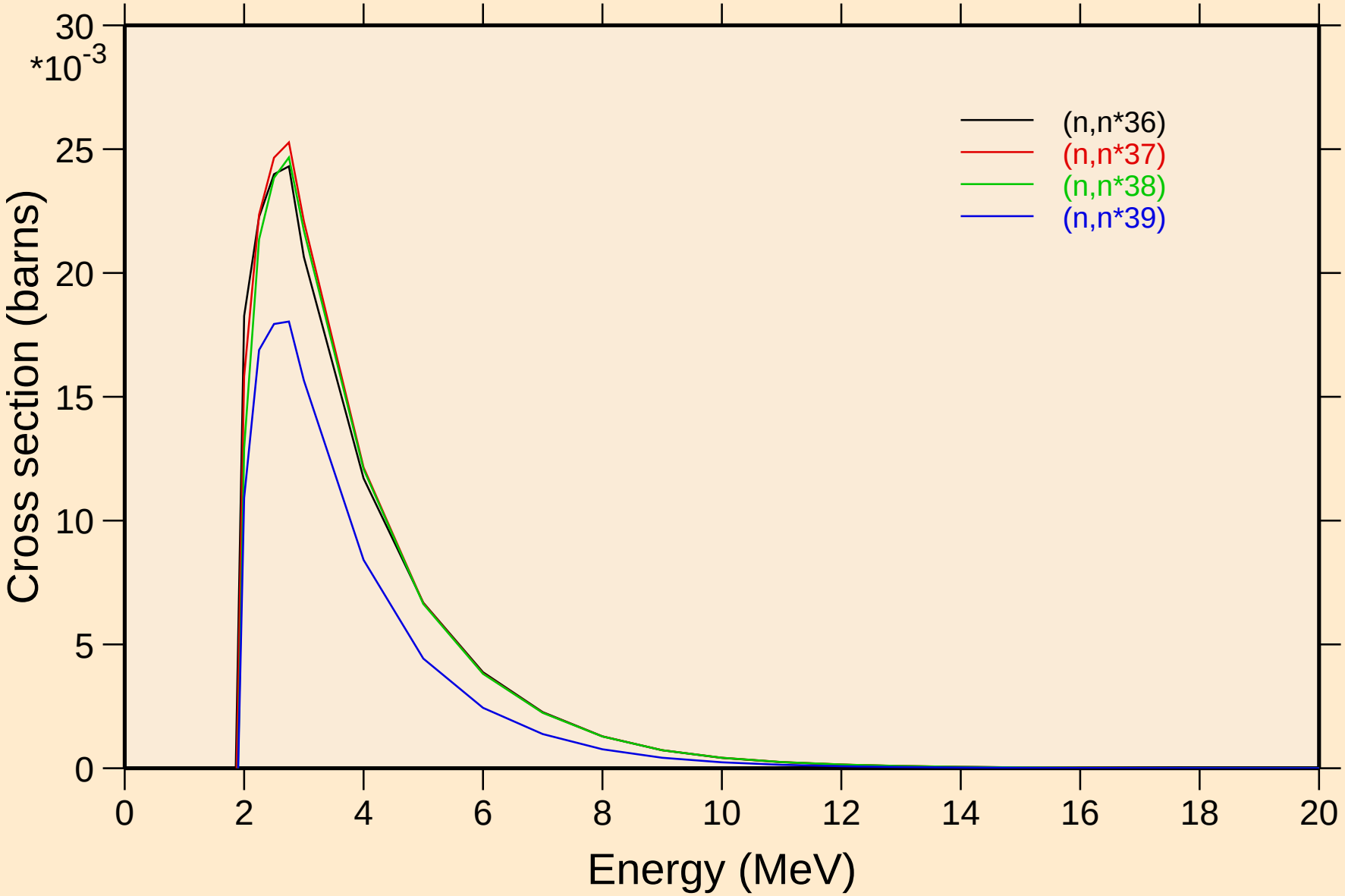


ADVANCE CALCULATIONS
Inelastic levels

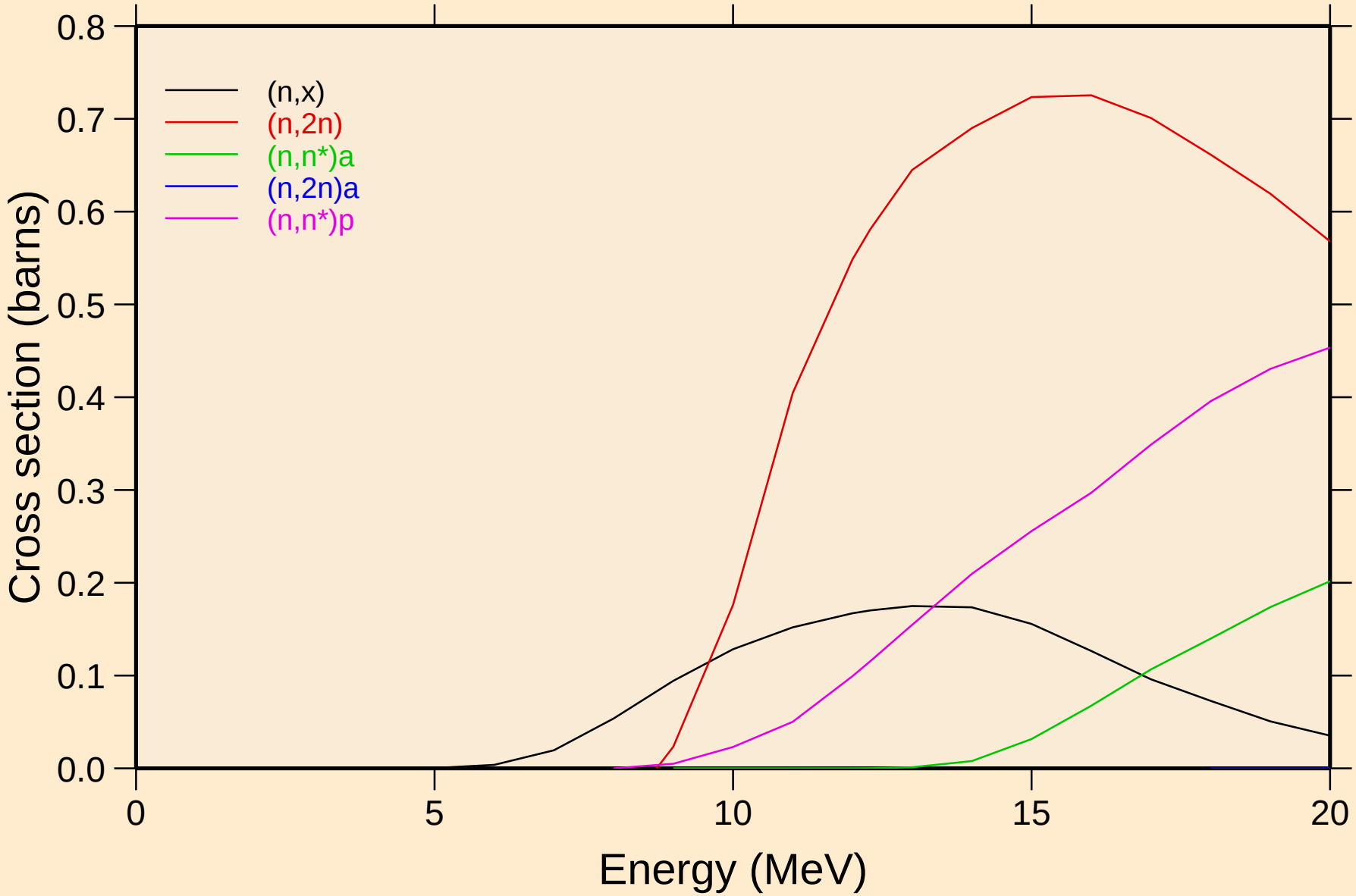


ADVANCE CALCULATIONS

Inelastic levels

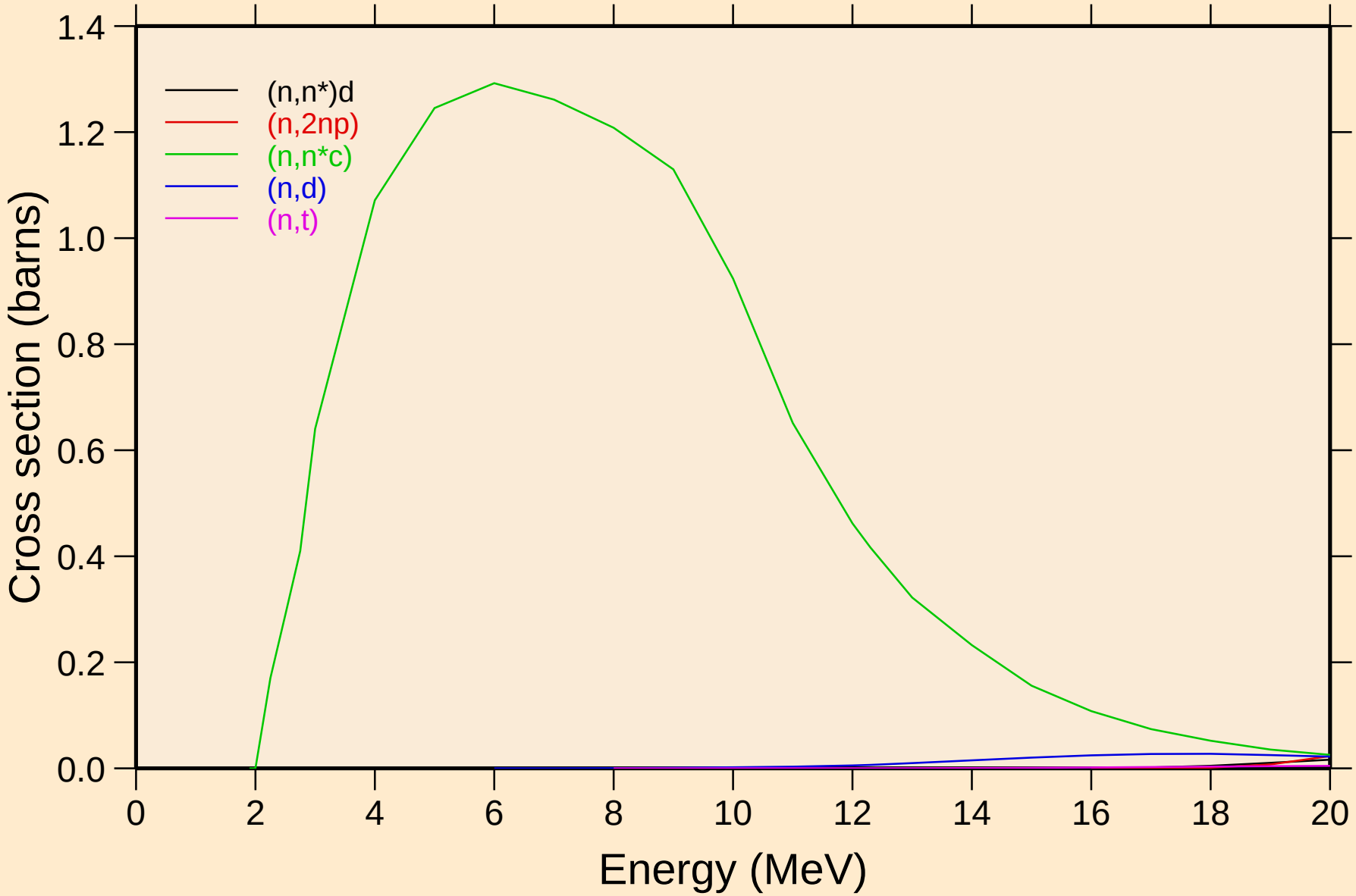


ADVANCE CALCULATIONS
Threshold reactions



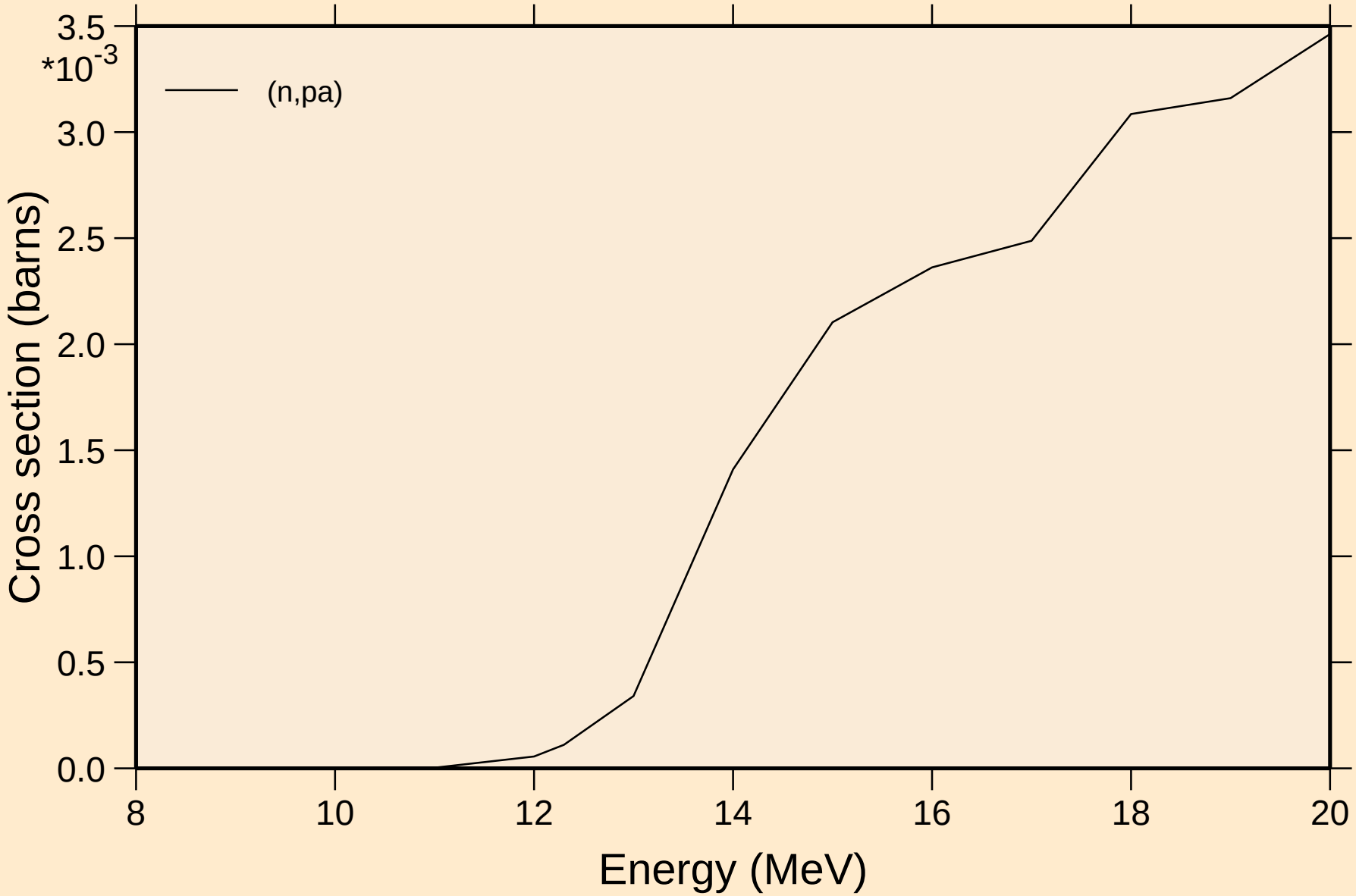
ADVANCE CALCULATIONS

Threshold reactions

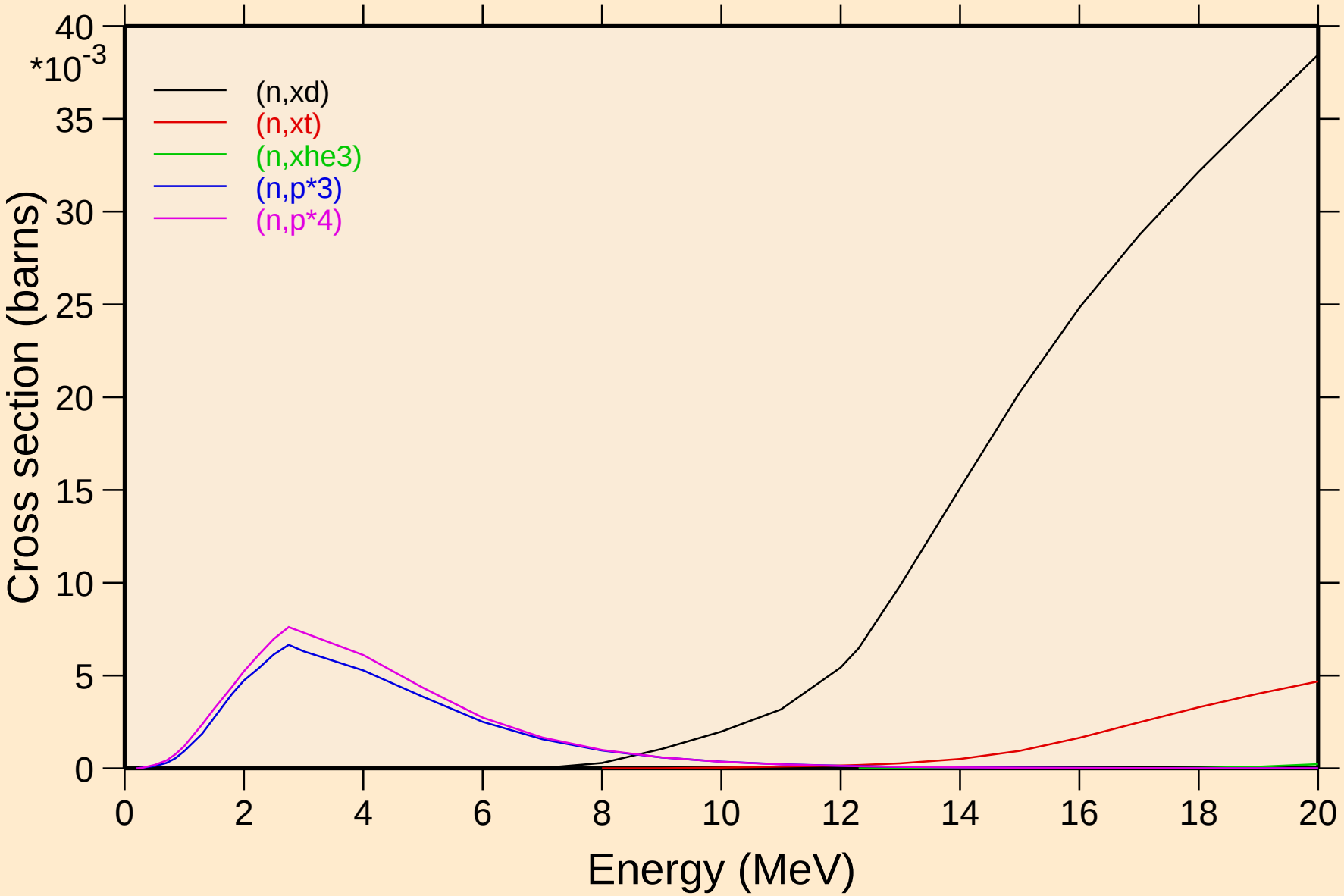


ADVANCE CALCULATIONS

Threshold reactions

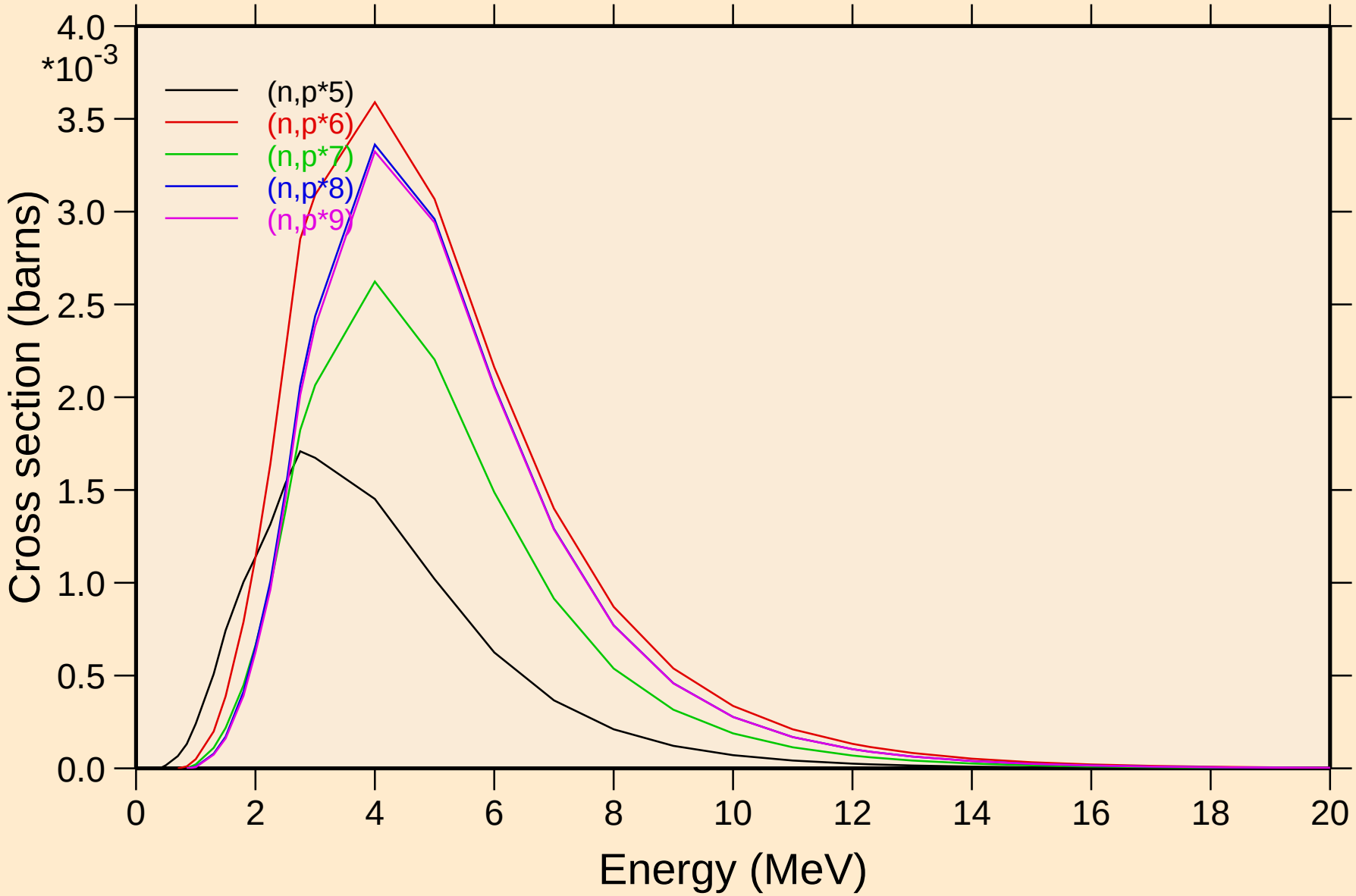


ADVANCE CALCULATIONS
Threshold reactions



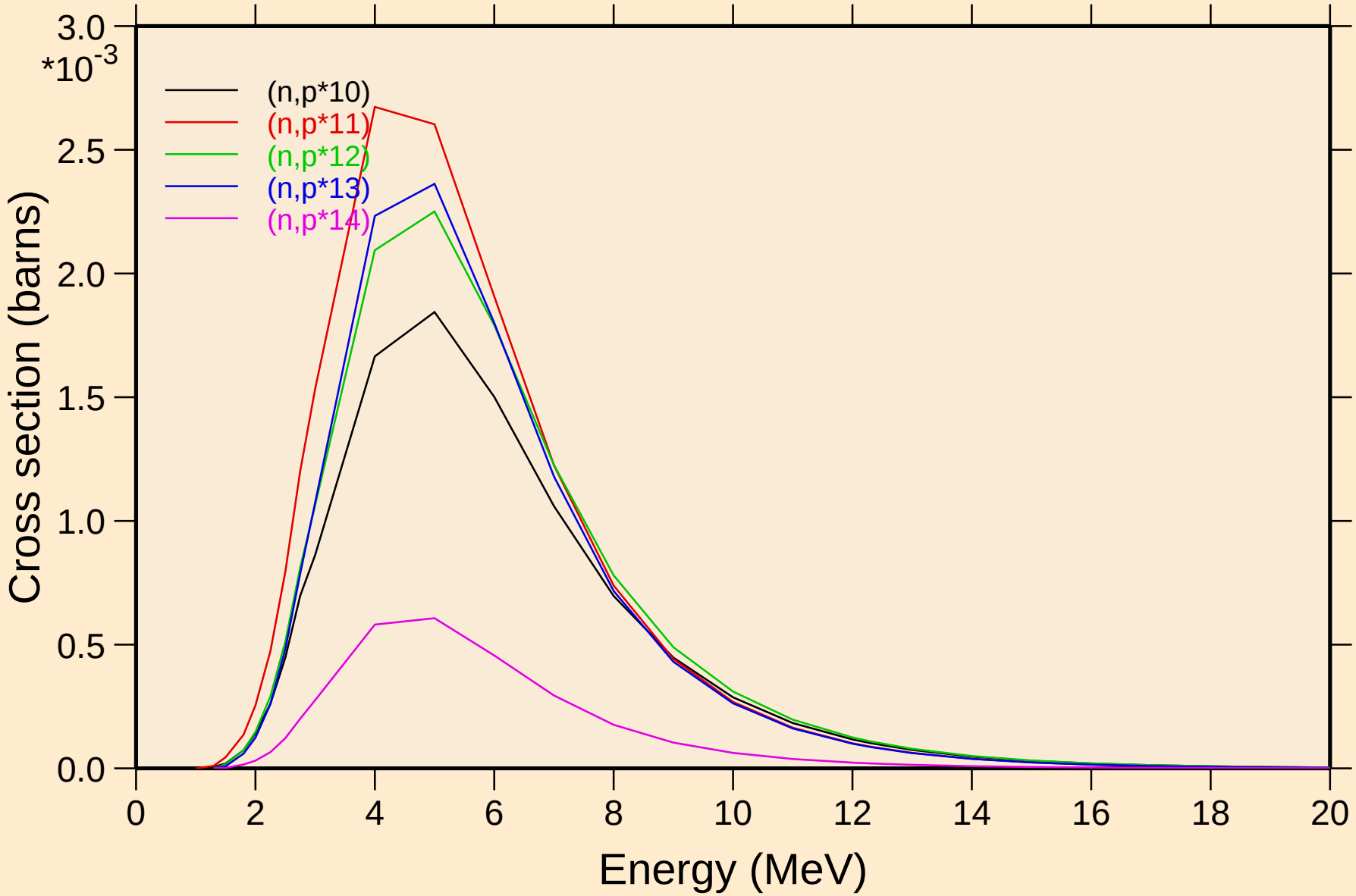
ADVANCE CALCULATIONS

Threshold reactions



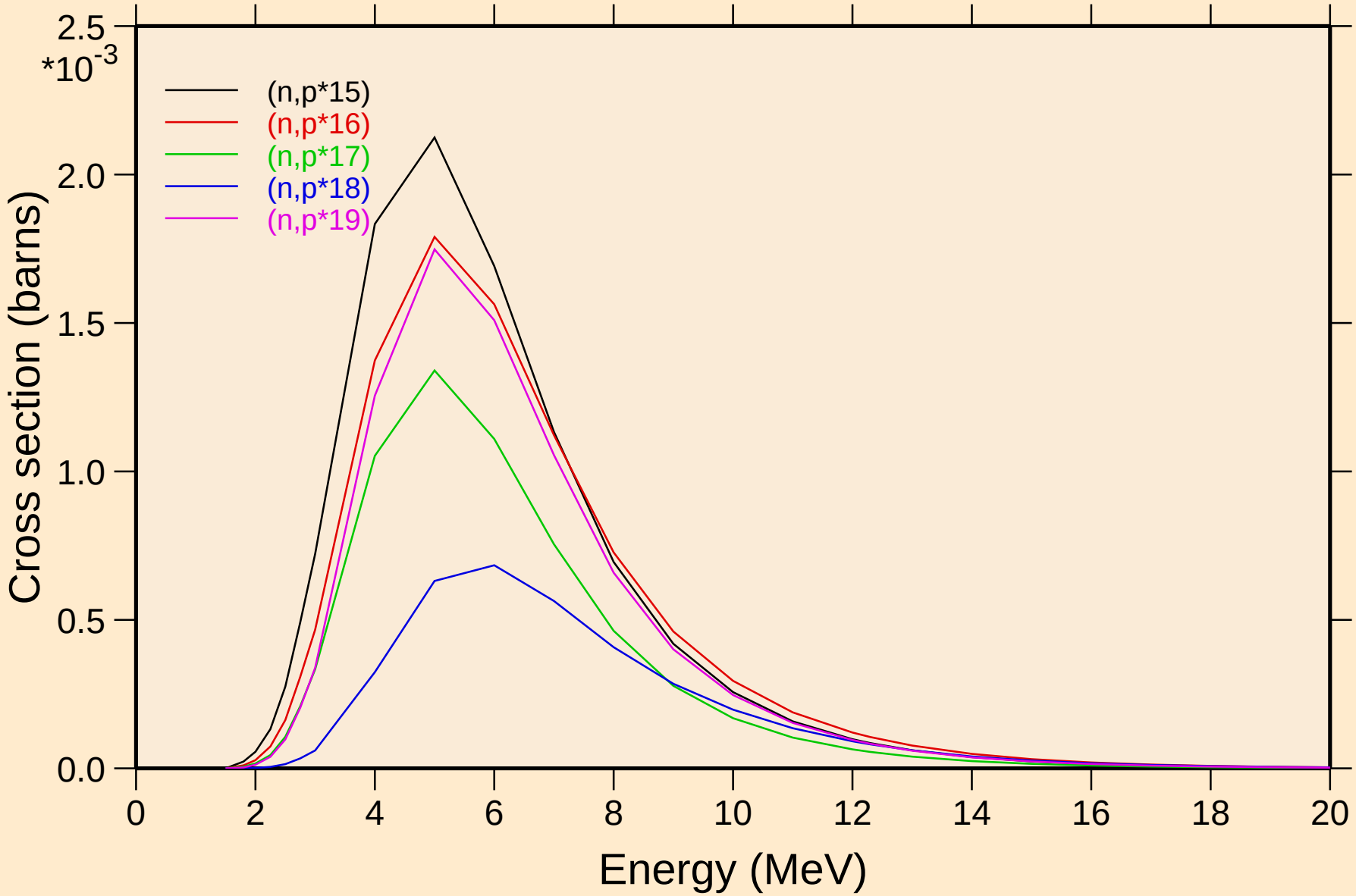
ADVANCE CALCULATIONS

Threshold reactions

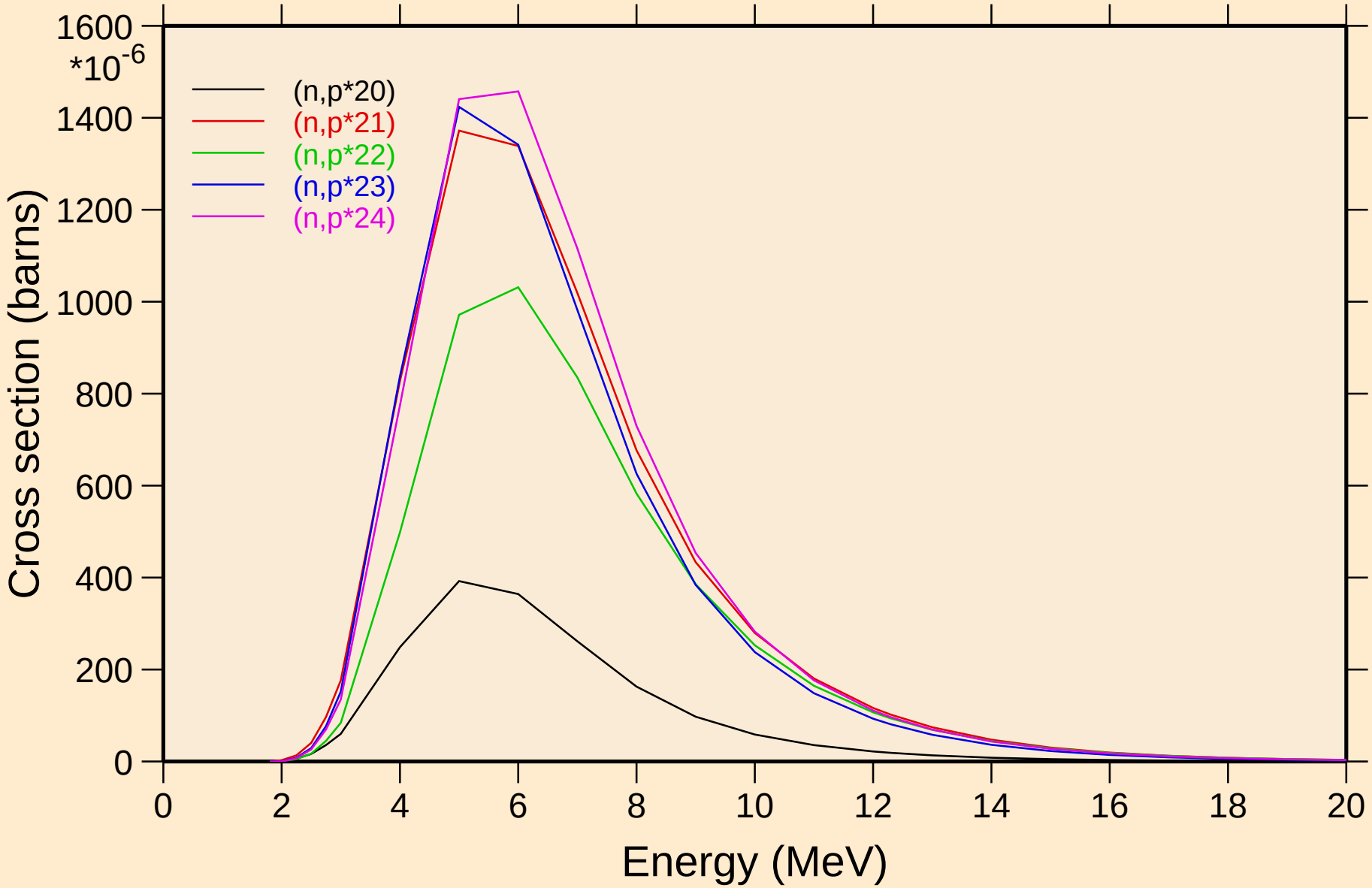


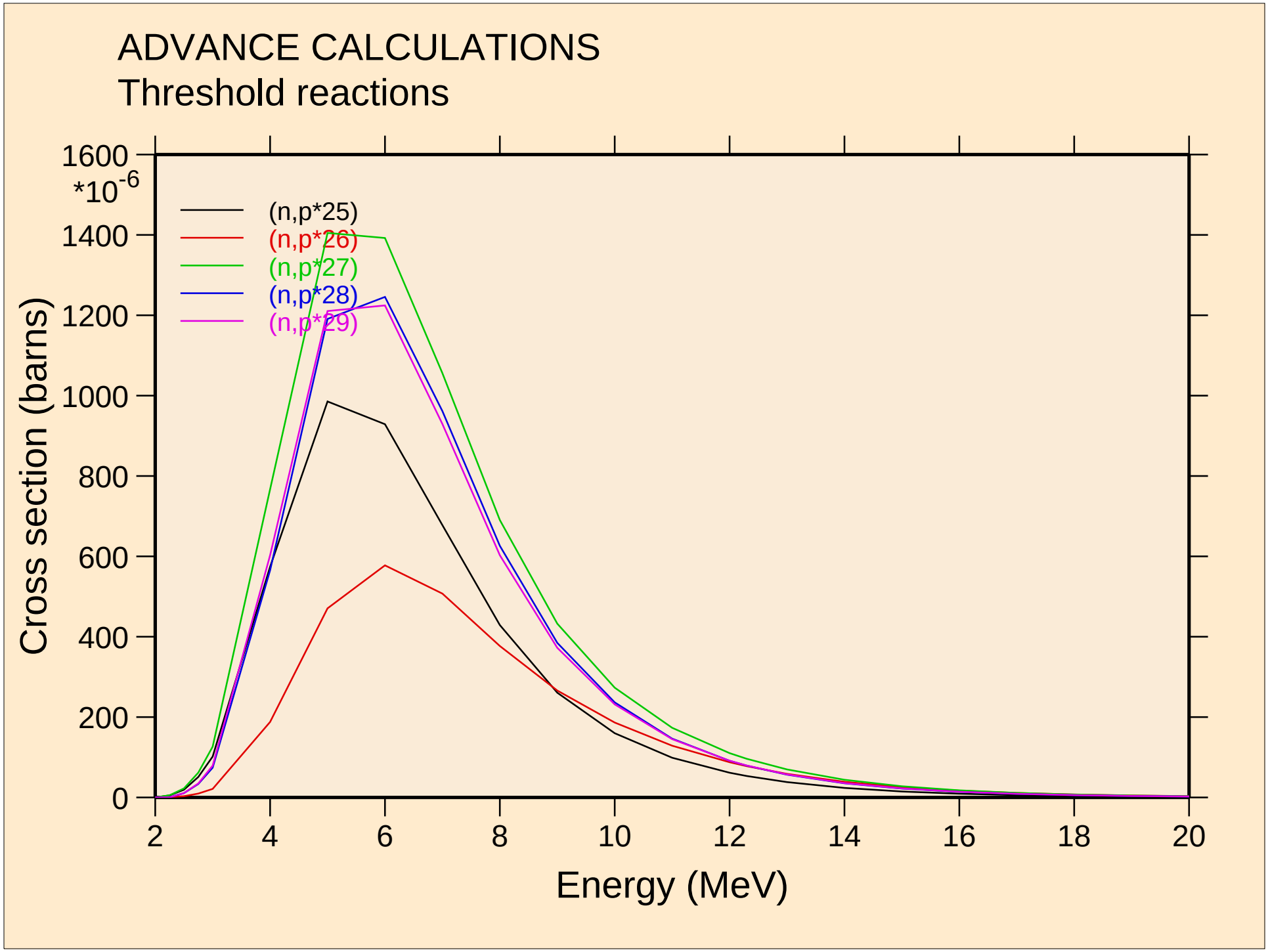
ADVANCE CALCULATIONS

Threshold reactions

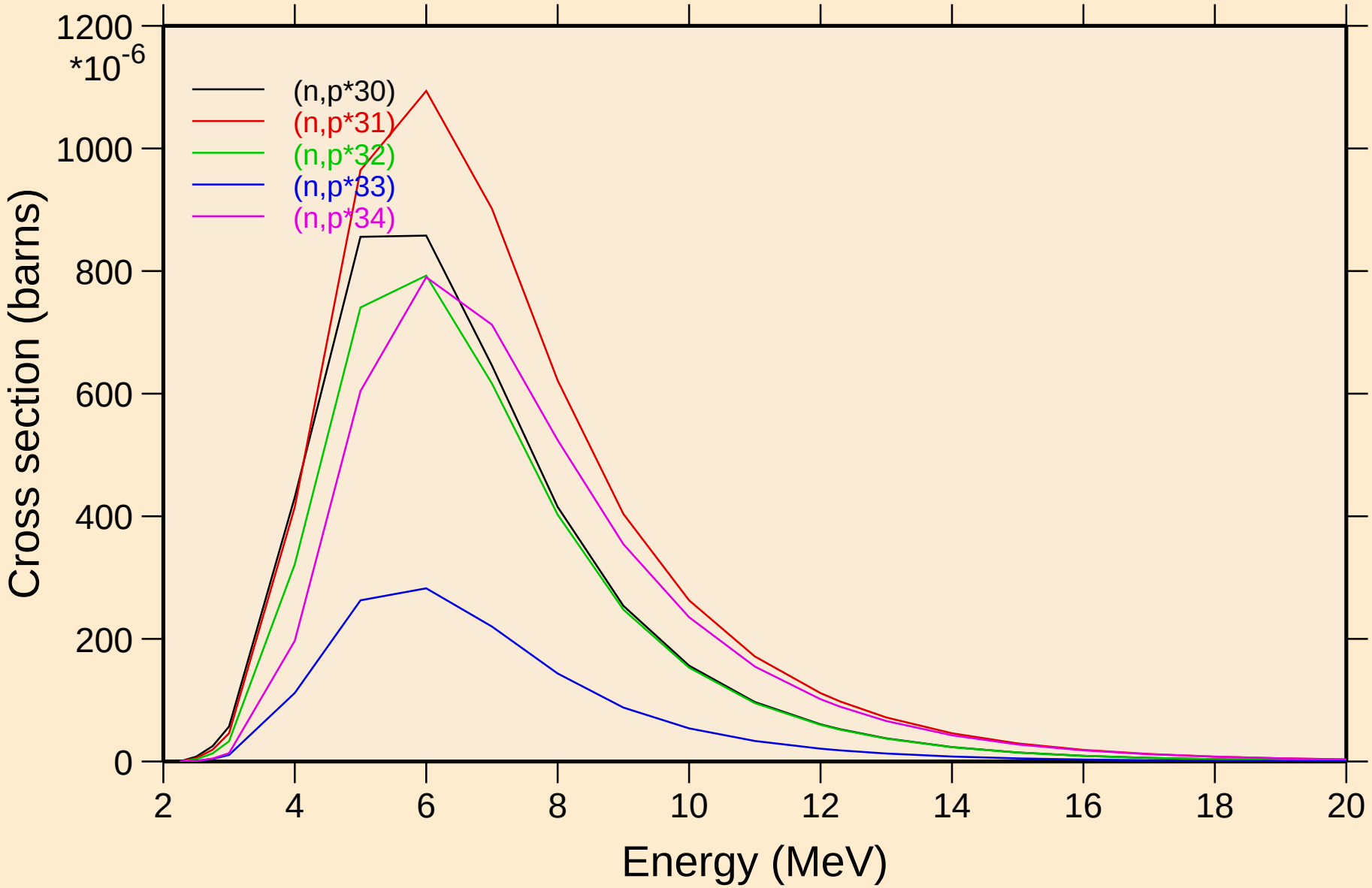


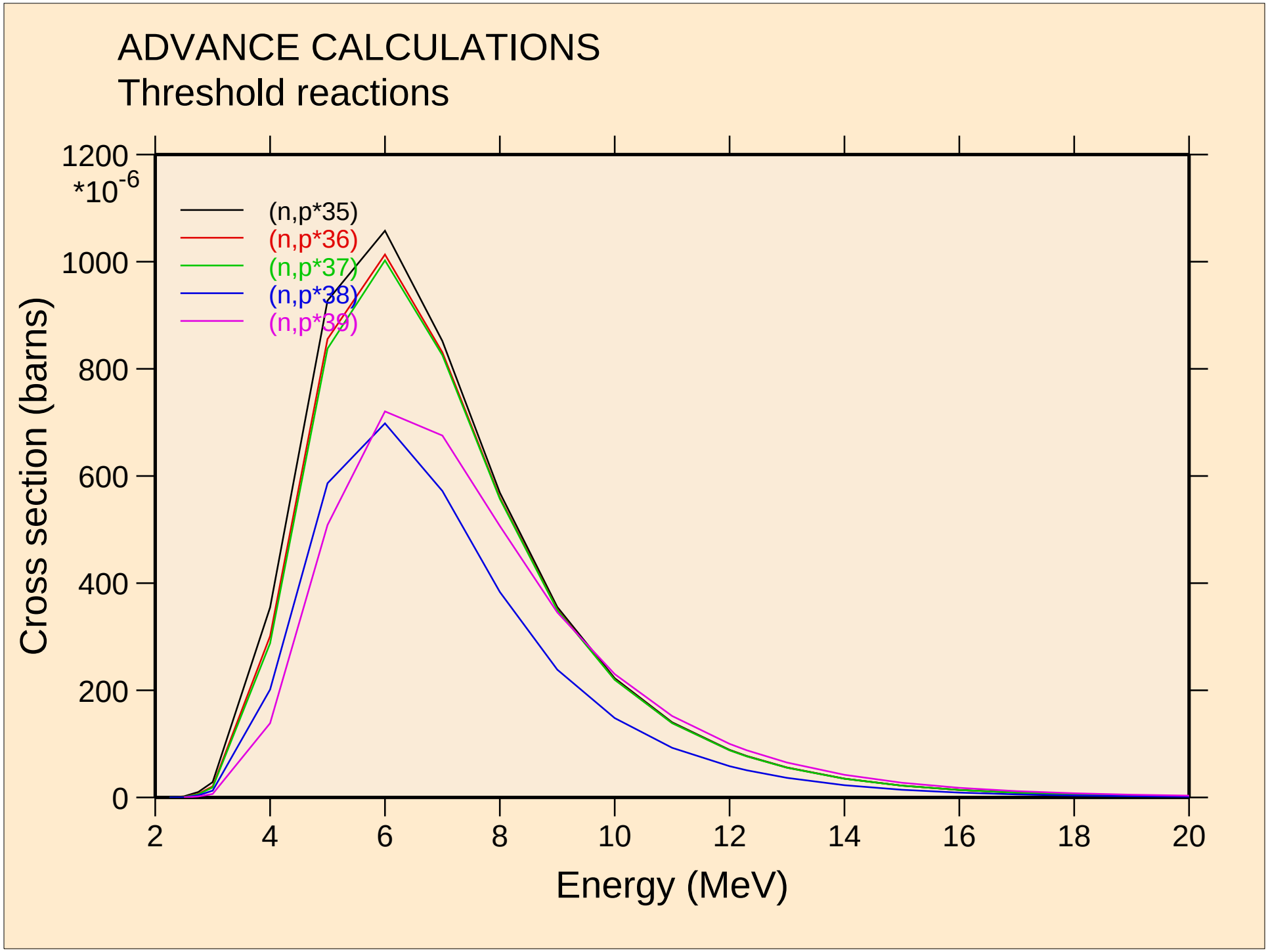
ADVANCE CALCULATIONS
Threshold reactions



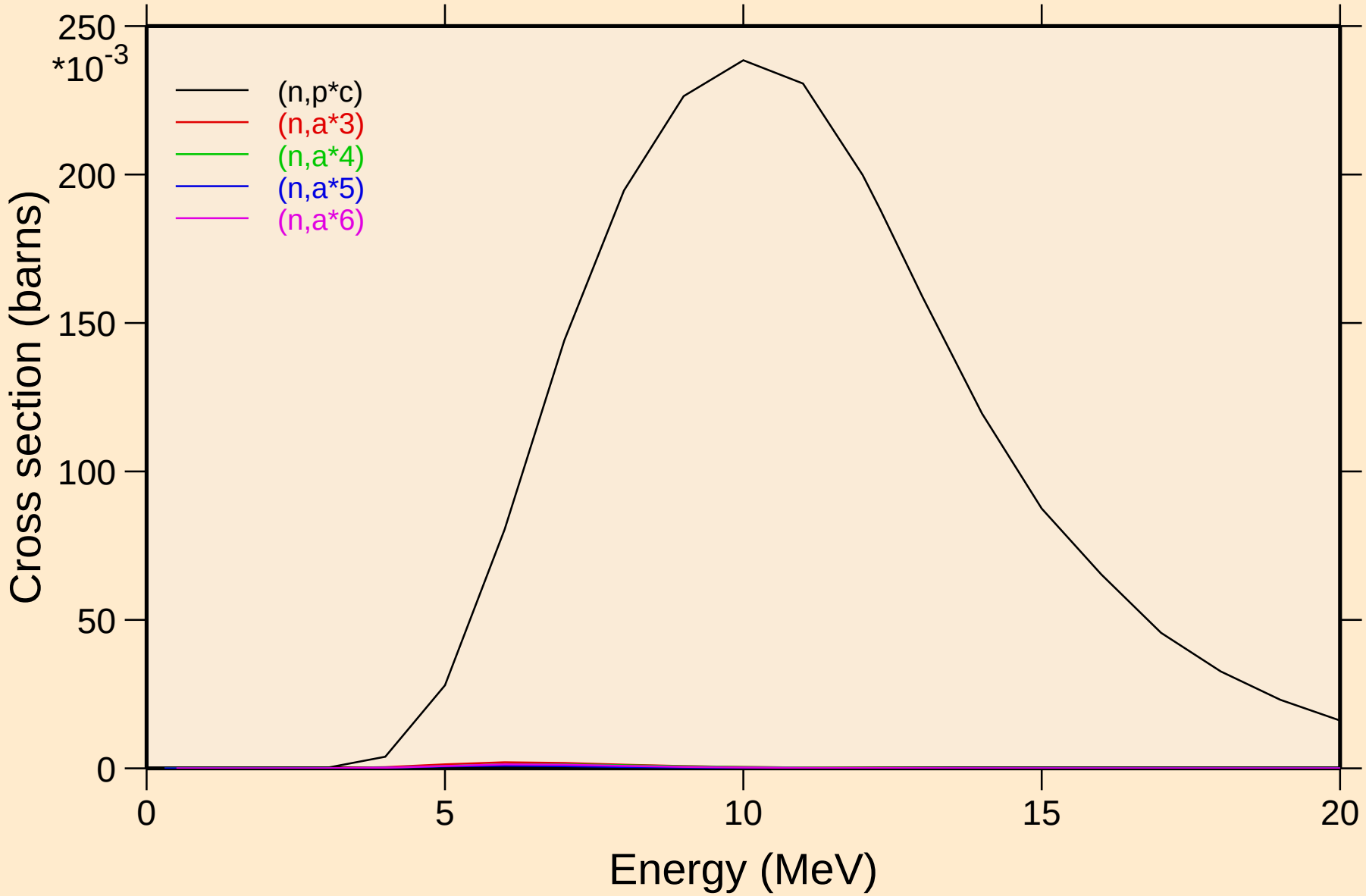

ADVANCE CALCULATIONS
Threshold reactions
(n,p*25)
(n,p*26)
(n,p*27)
(n,p*28)
(n,p*29)
Cross section (barns)
*10-6
1600
1400
1200
1000
800
600
400
200
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

ADVANCE CALCULATIONS
Threshold reactions



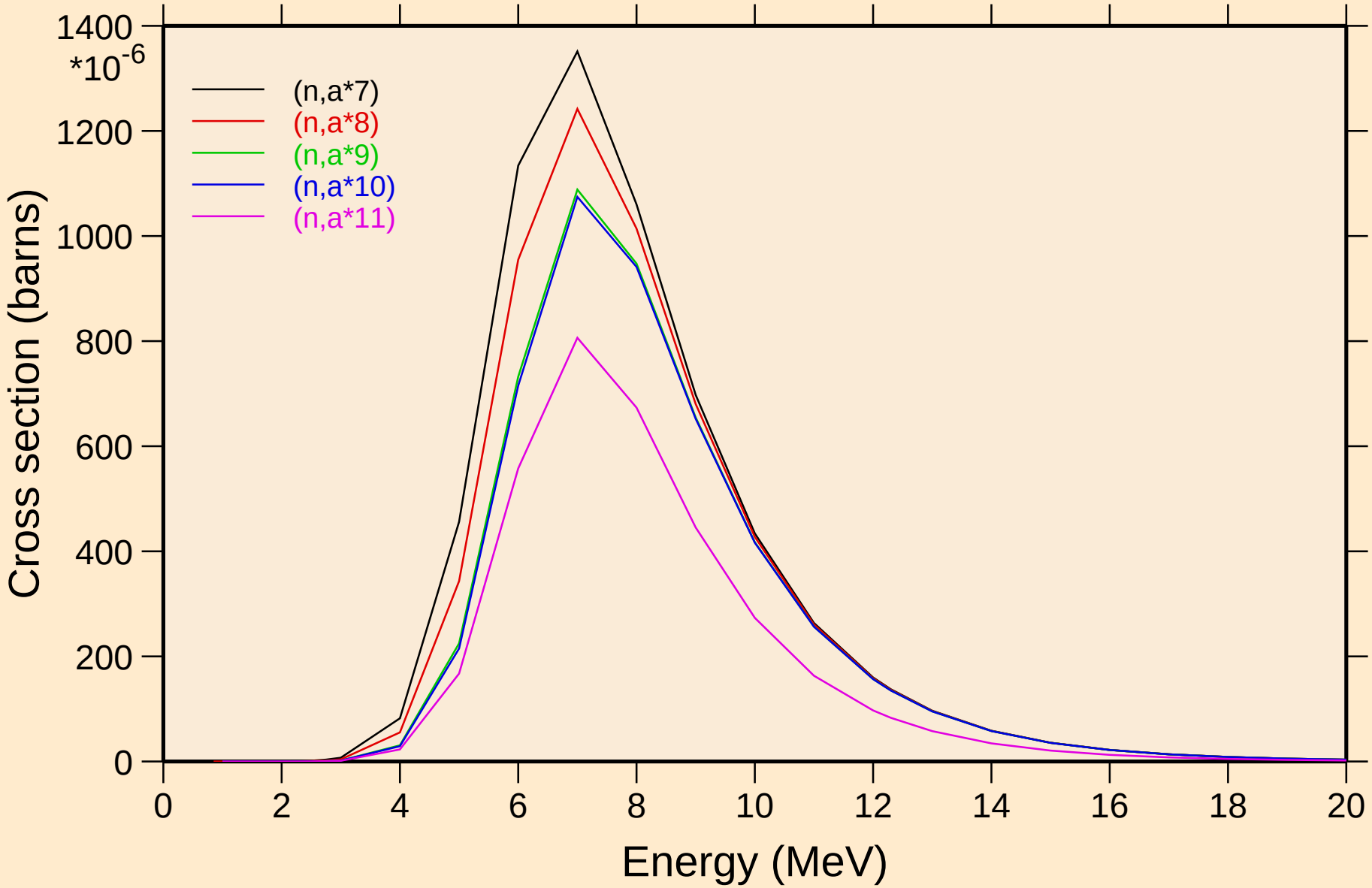

ADVANCE CALCULATIONS
Threshold reactions
(n,p*35)
(n,p*36)
(n,p*37)
(n,p*38)
(n,p*39)
Cross section (barns)
*10-6
1200
1000
800
600
400
200
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

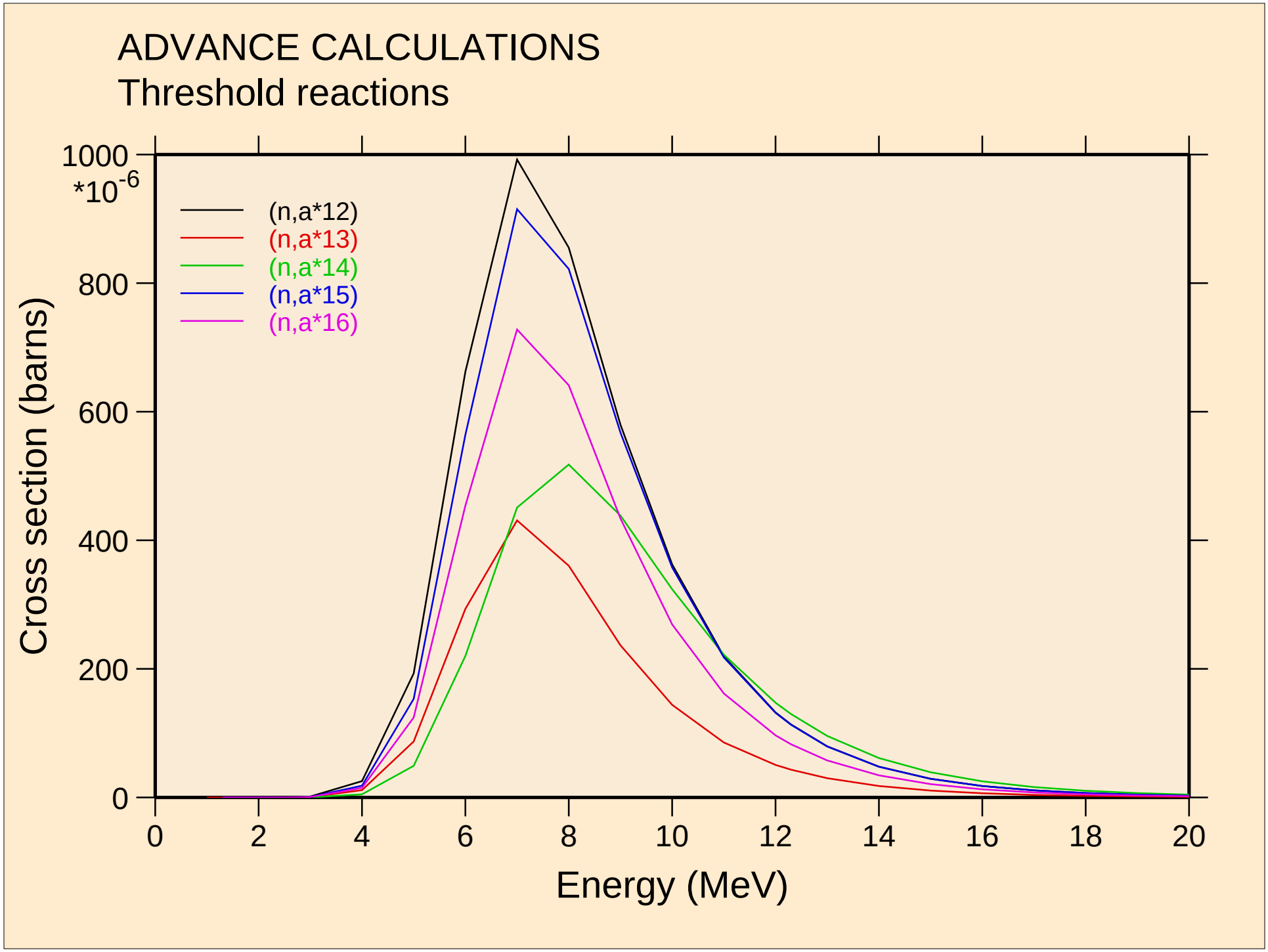
ADVANCE CALCULATIONS
Threshold reactions

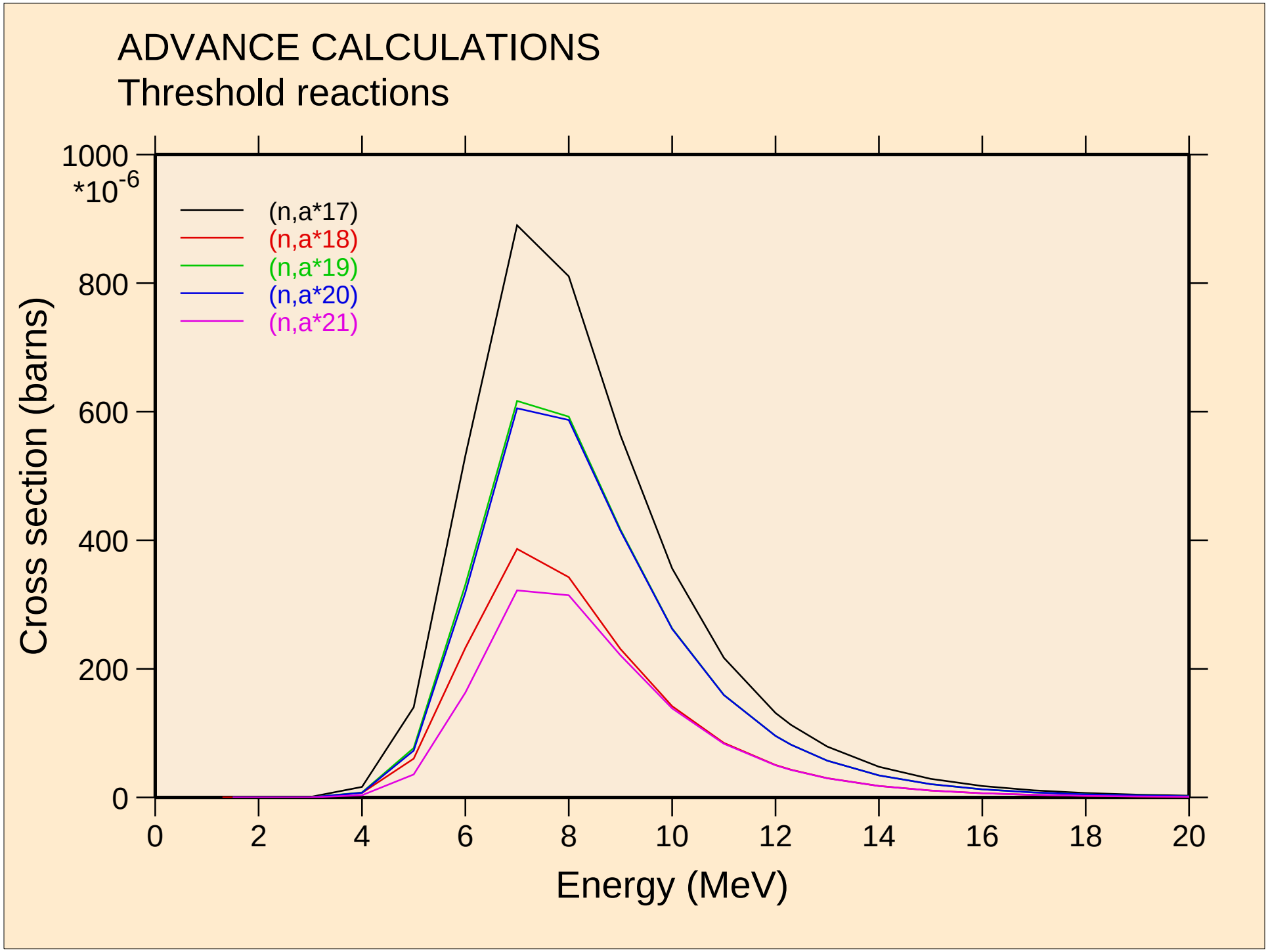


ADVANCE CALCULATIONS

Threshold reactions

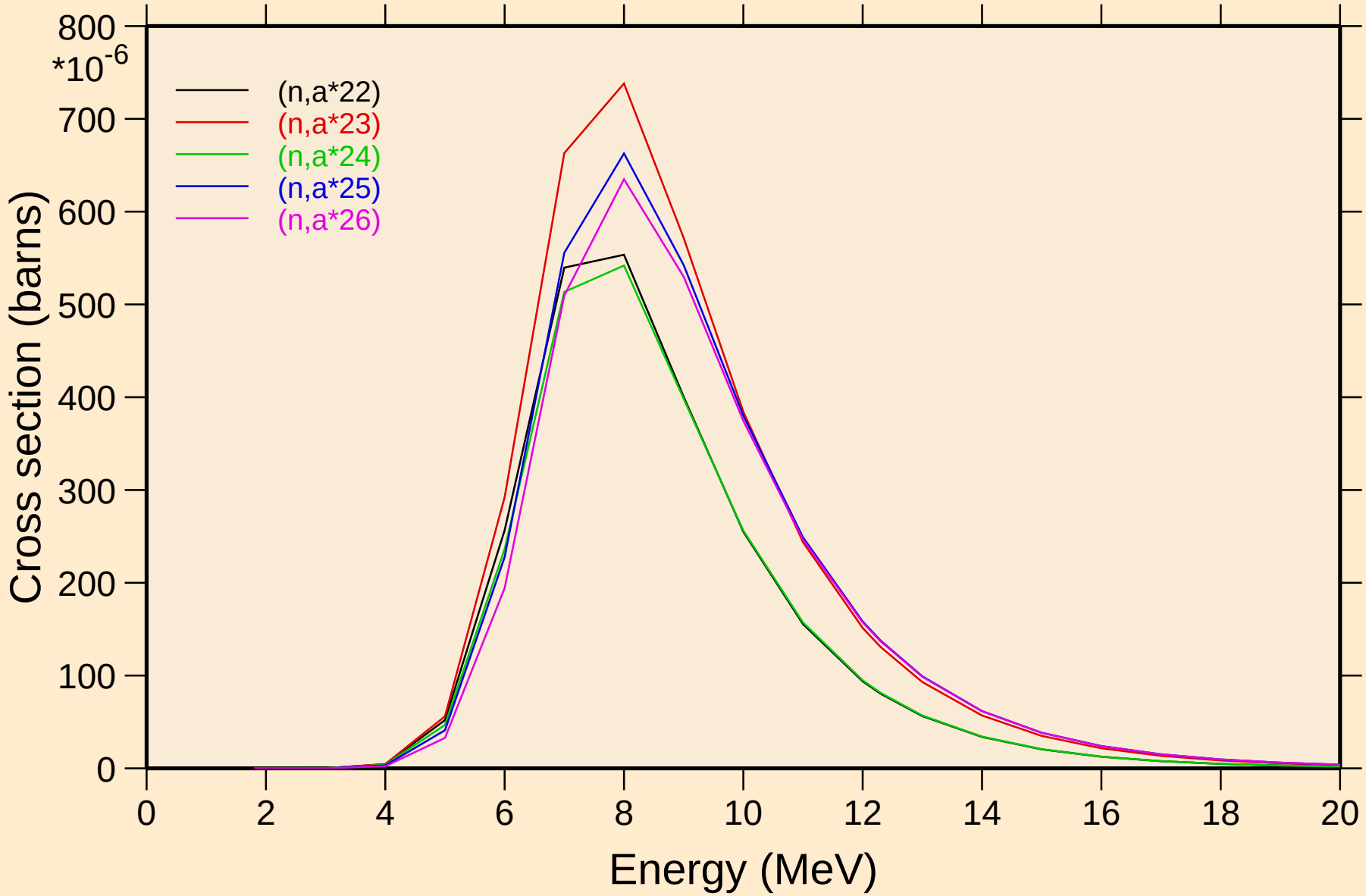



ADVANCE CALCULATIONS
Threshold reactions
1000
*10-6
800
600
400
200
0
Cross section (barns)
(n,a*12)
(n,a*13)
(n,a*14)
(n,a*15)
(n,a*16)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)


ADVANCE CALCULATIONS
Threshold reactions
1000
*10-6
800
600
400
200
0
Cross section (barns)
(n,a*17)
(n,a*18)
(n,a*19)
(n,a*20)
(n,a*21)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

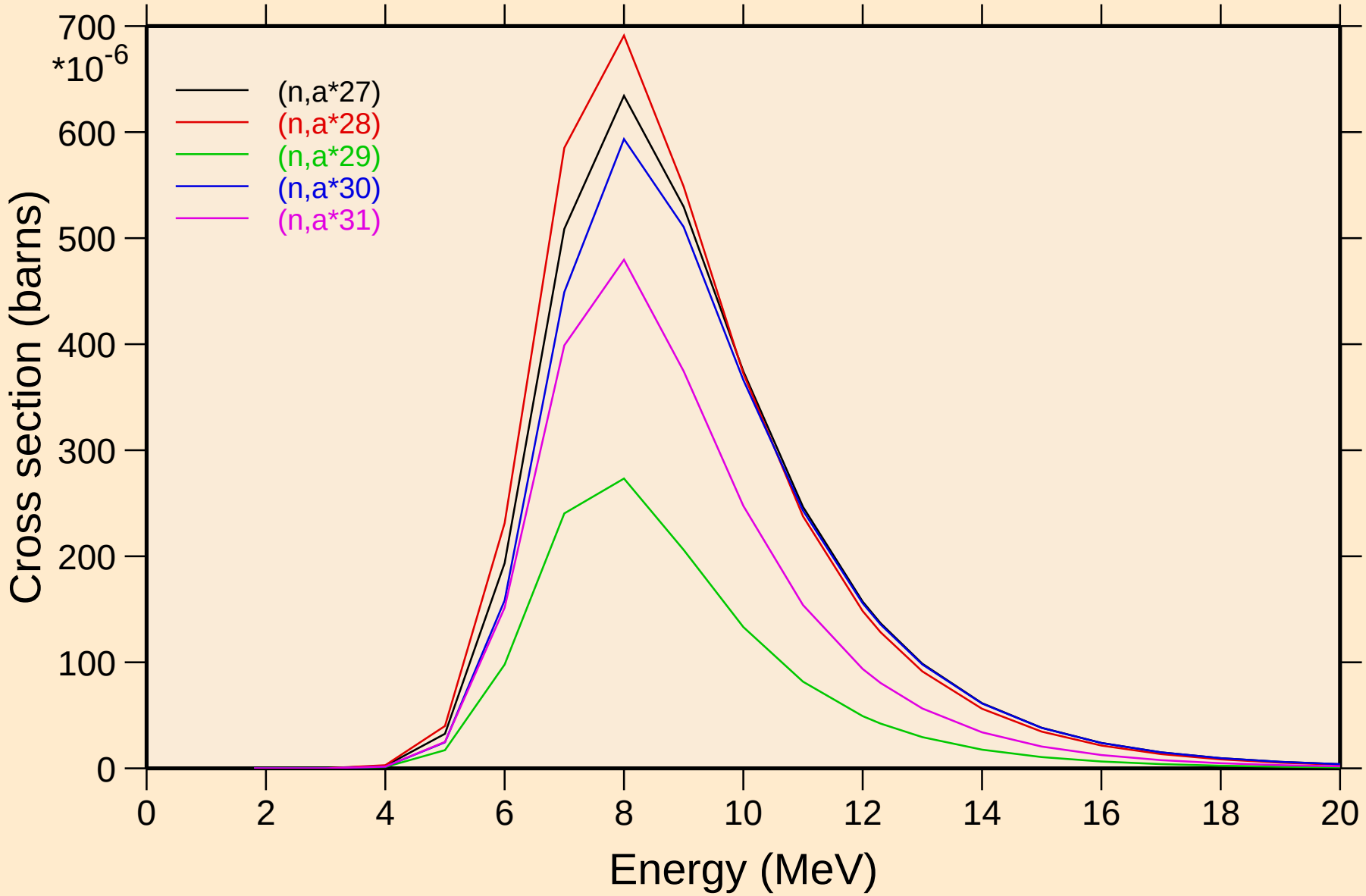
ADVANCE CALCULATIONS

Threshold reactions



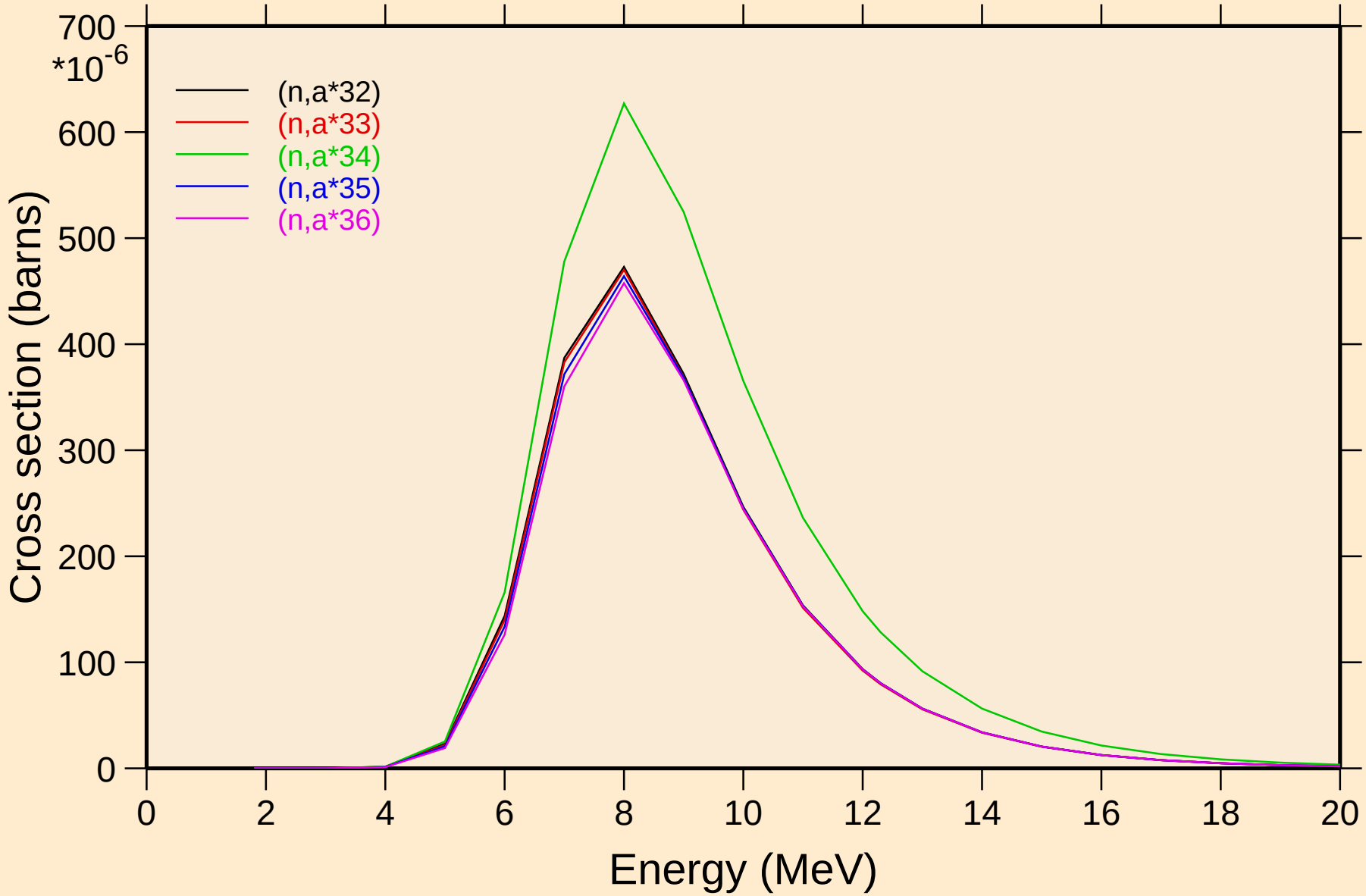
ADVANCE CALCULATIONS

Threshold reactions

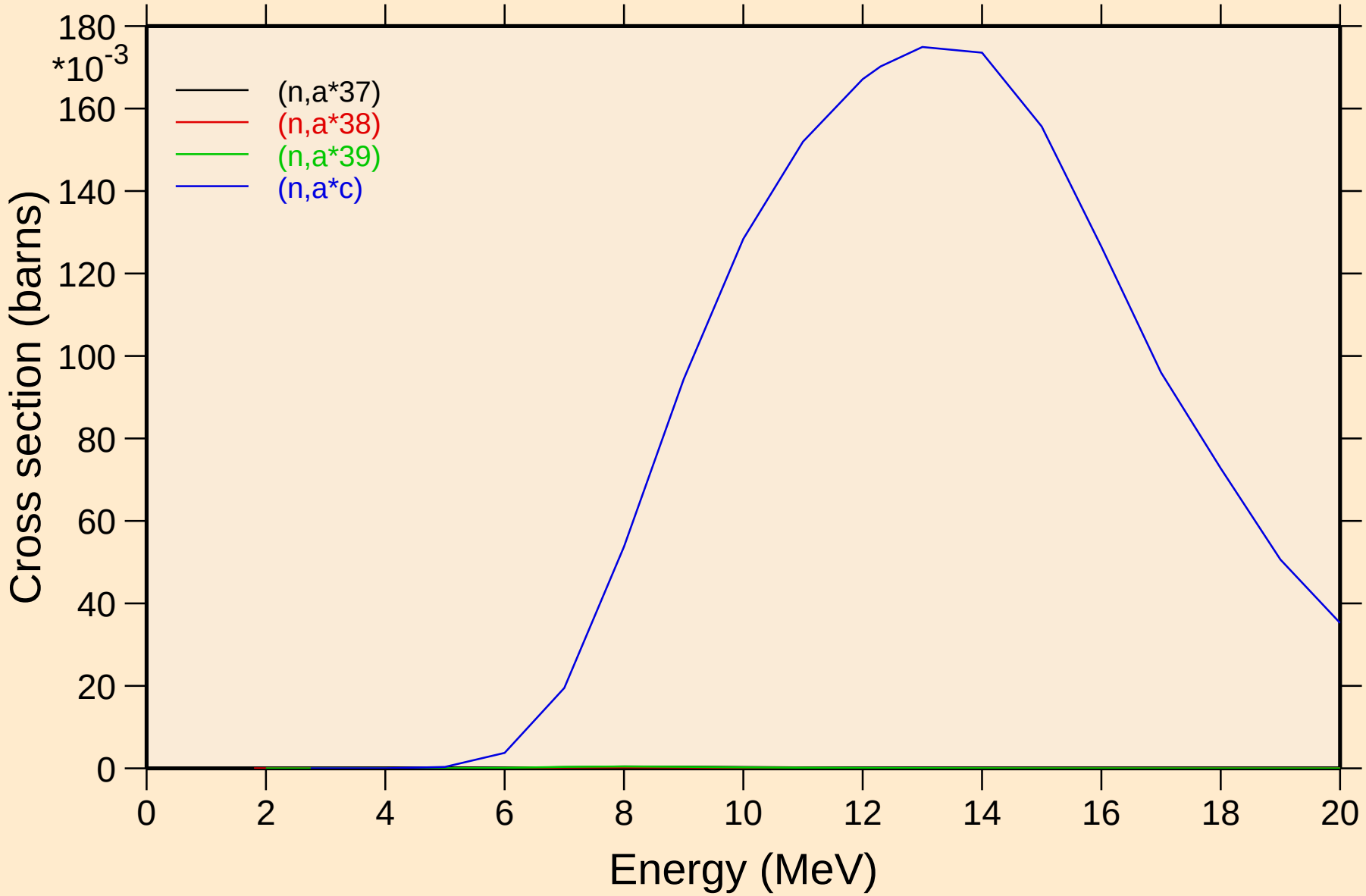


ADVANCE CALCULATIONS

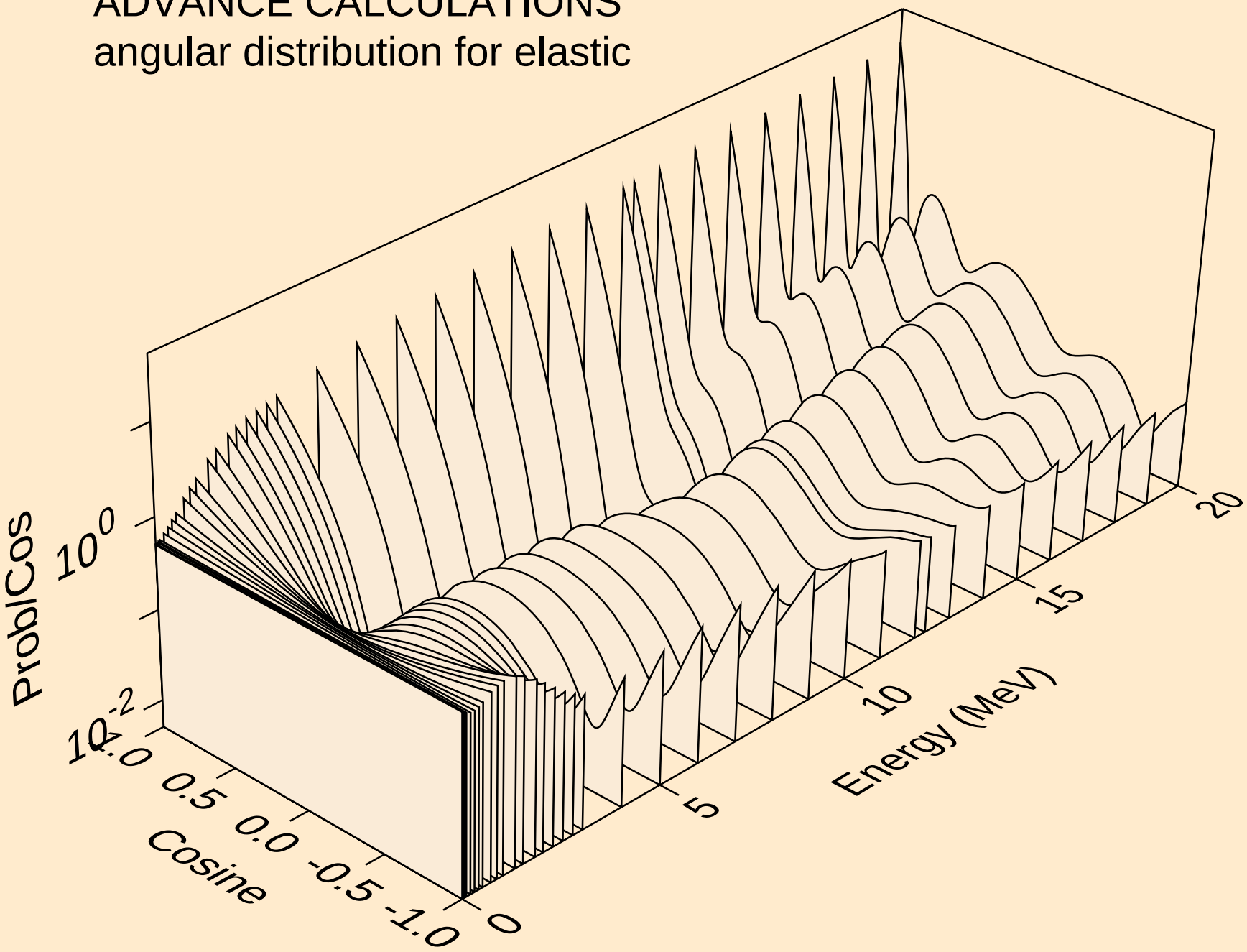
Threshold reactions



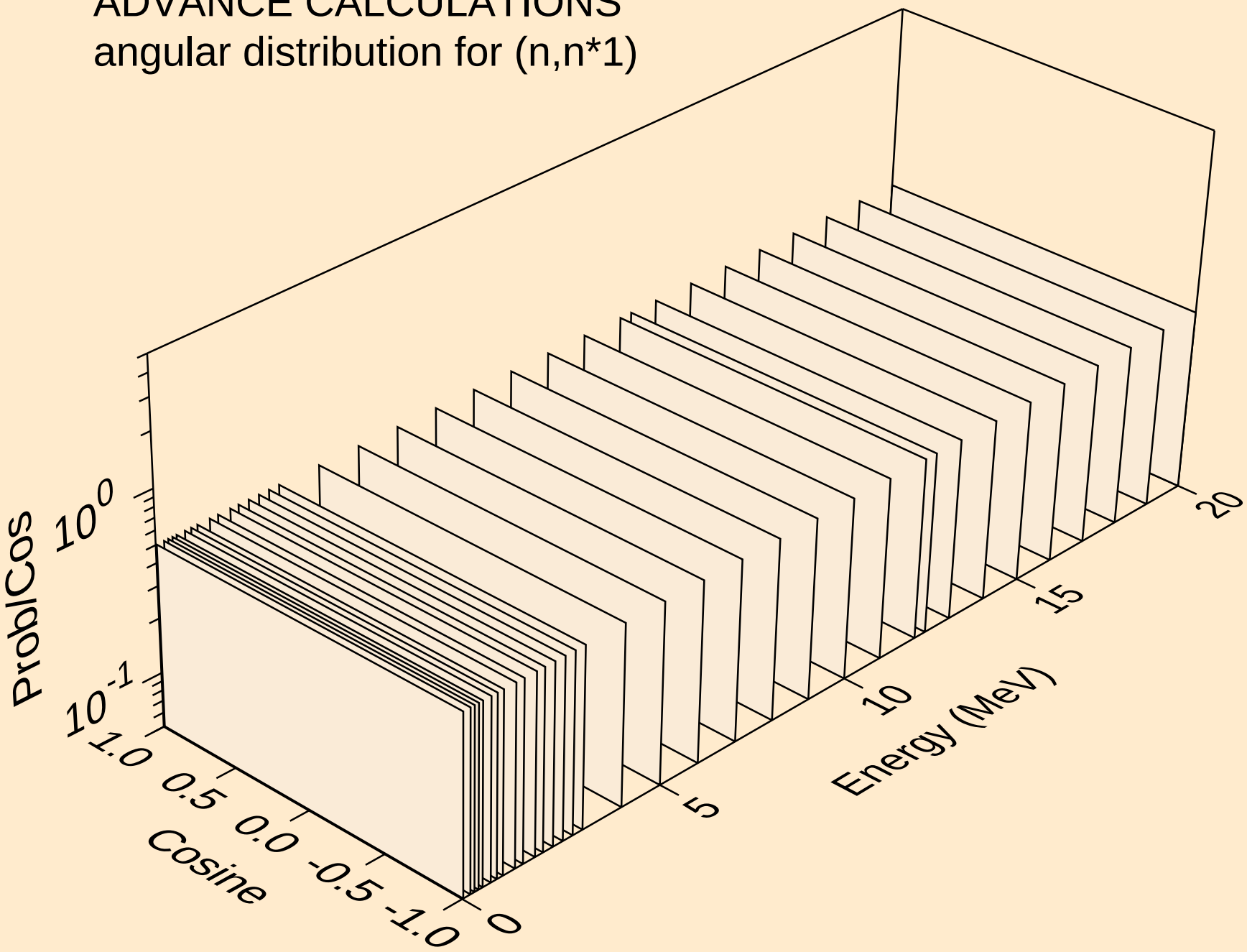
ADVANCE CALCULATIONS
Threshold reactions



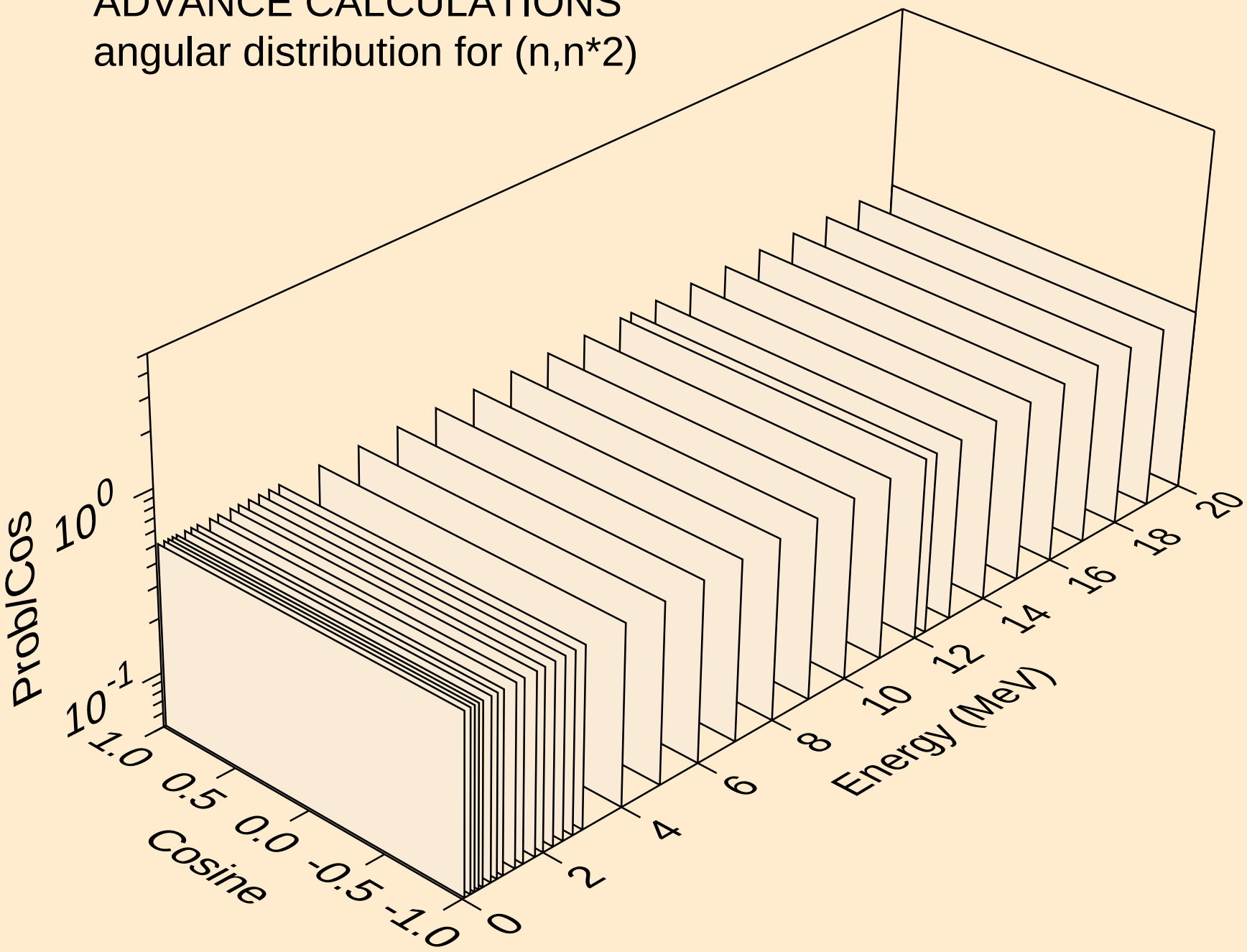
ADVANCE CALCULATIONS
angular distribution for elastic



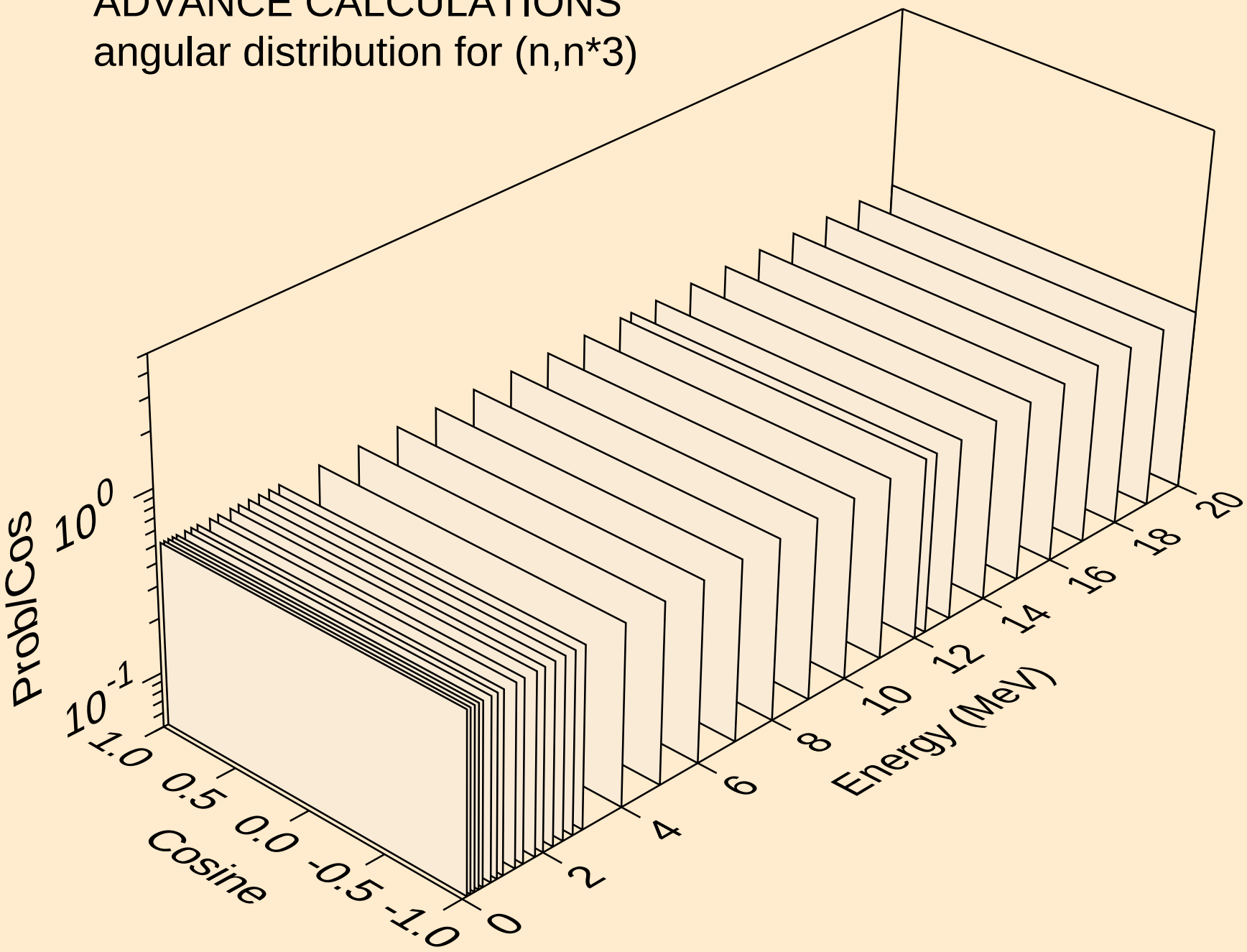
ADVANCE CALCULATIONS
angular distribution for (n,n*1)



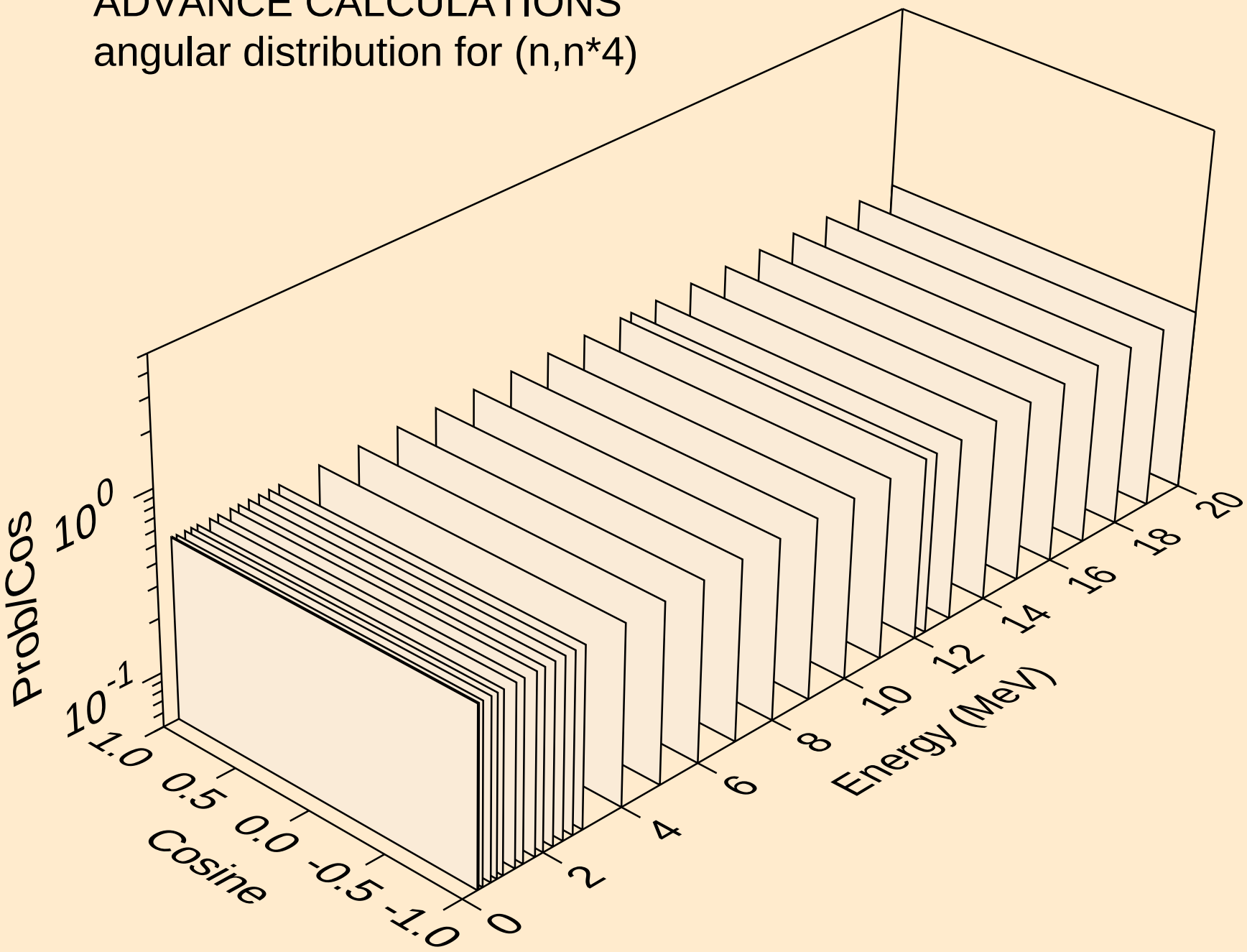
ADVANCE CALCULATIONS
angular distribution for (n,n*2)



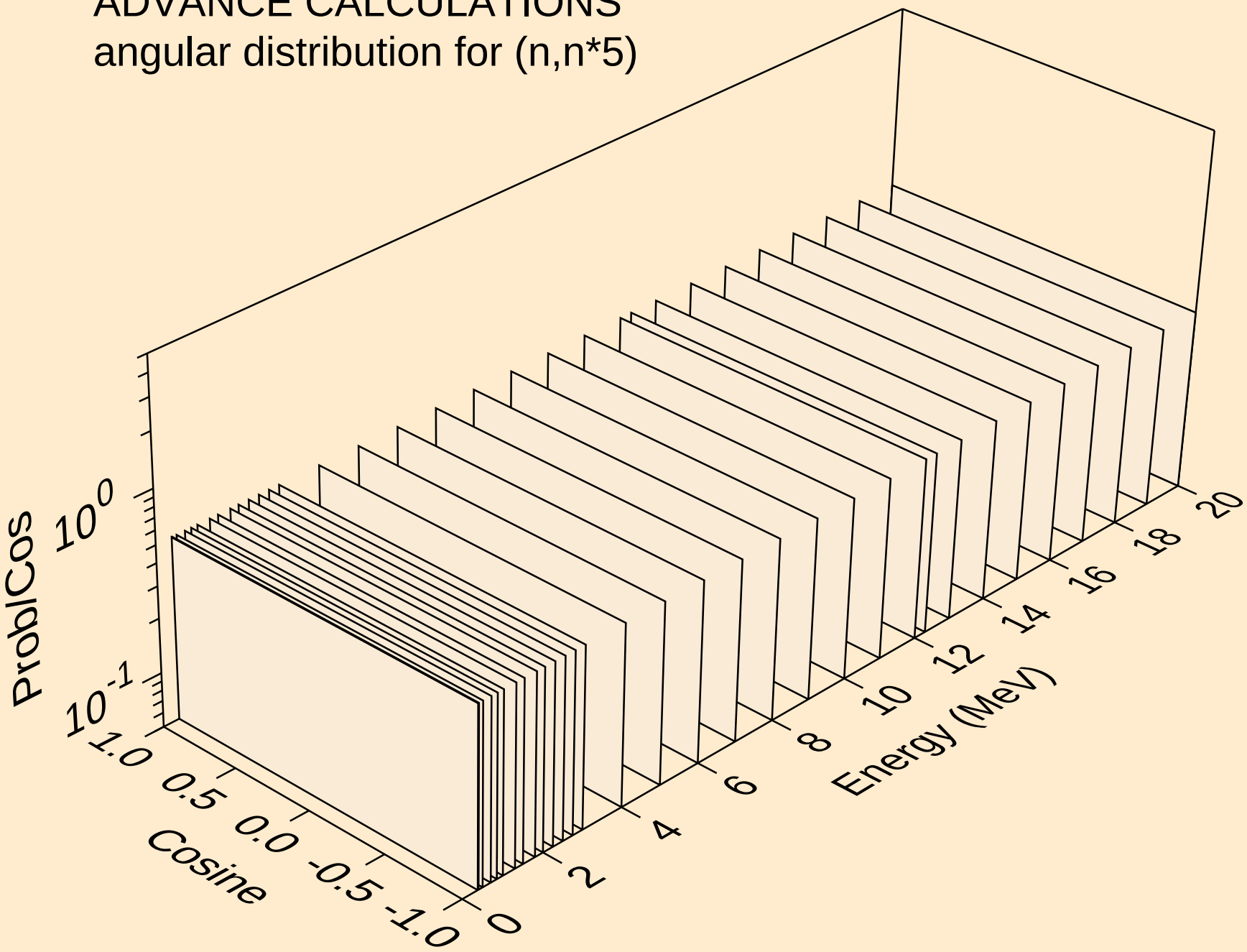
ADVANCE CALCULATIONS
angular distribution for (n,n*3)



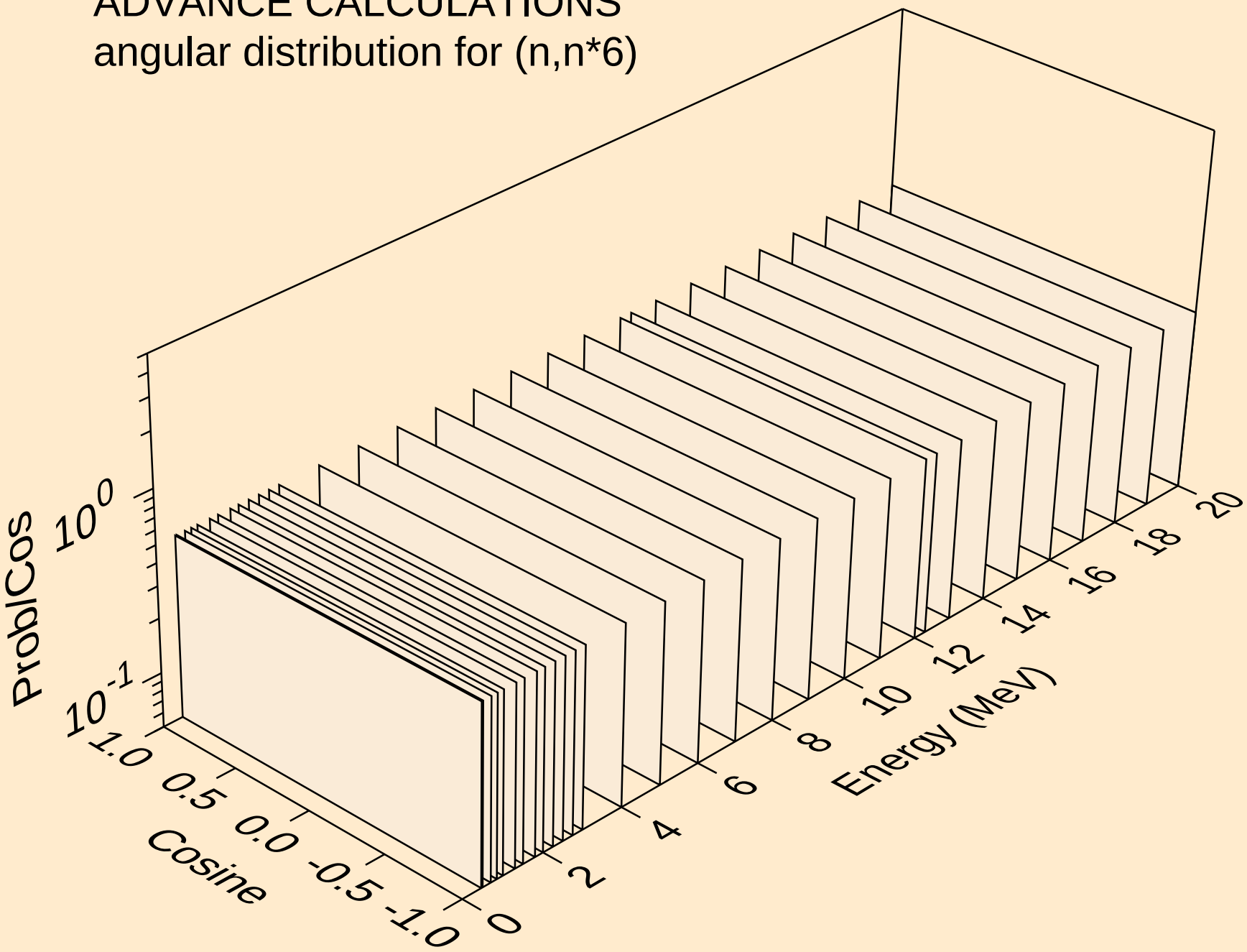
ADVANCE CALCULATIONS
angular distribution for (n,n*4)



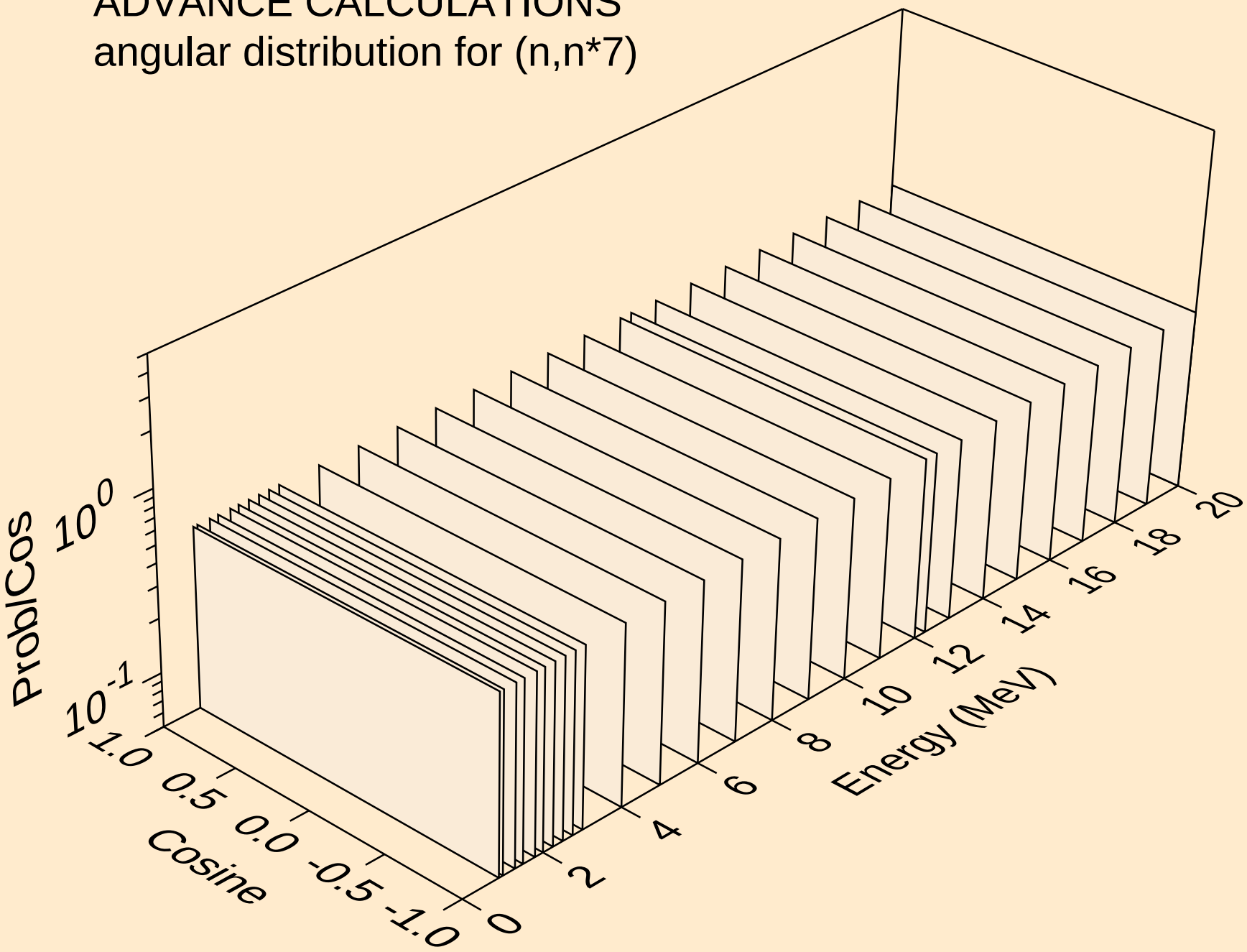
ADVANCE CALCULATIONS
angular distribution for (n,n*5)



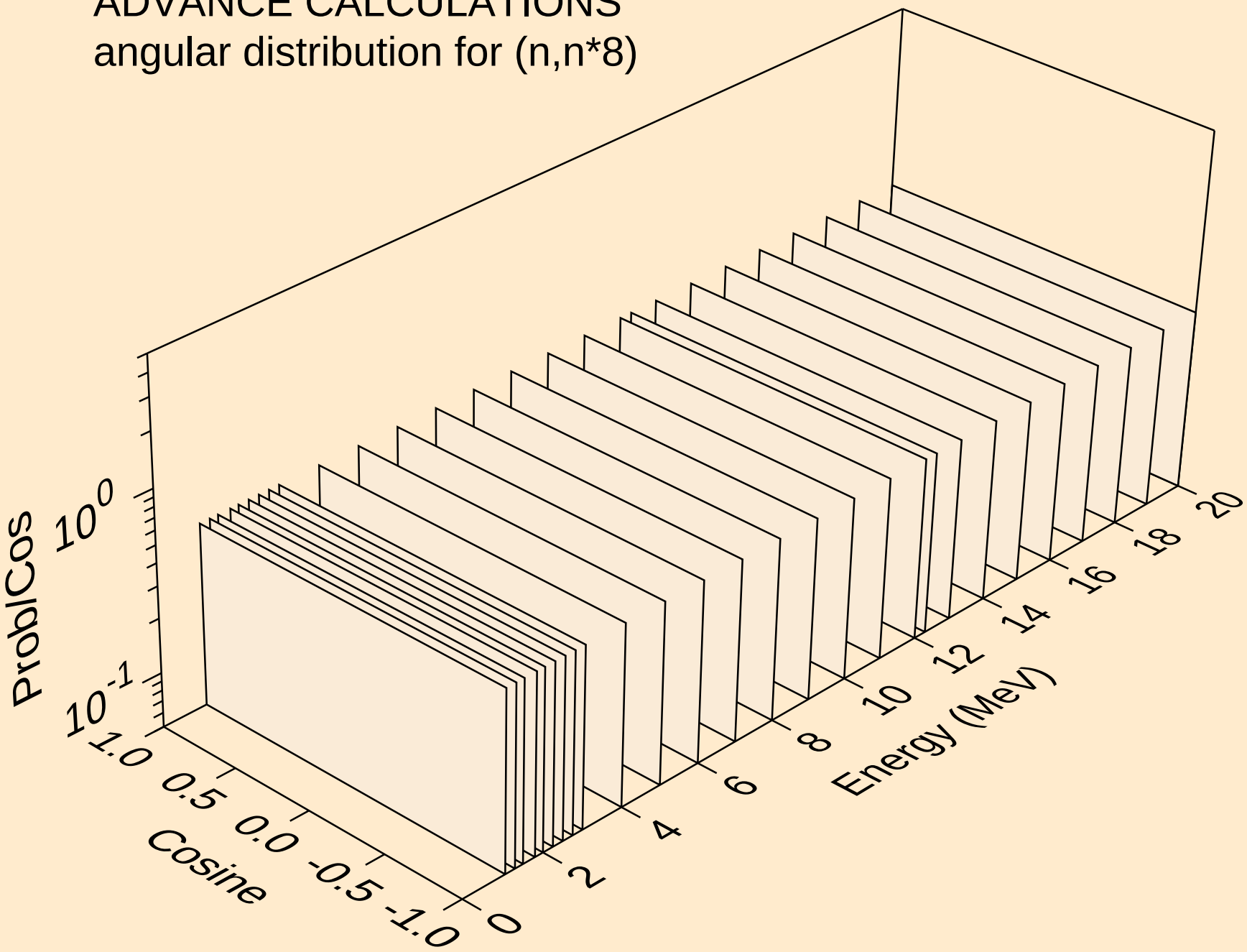
ADVANCE CALCULATIONS
angular distribution for (n,n*6)



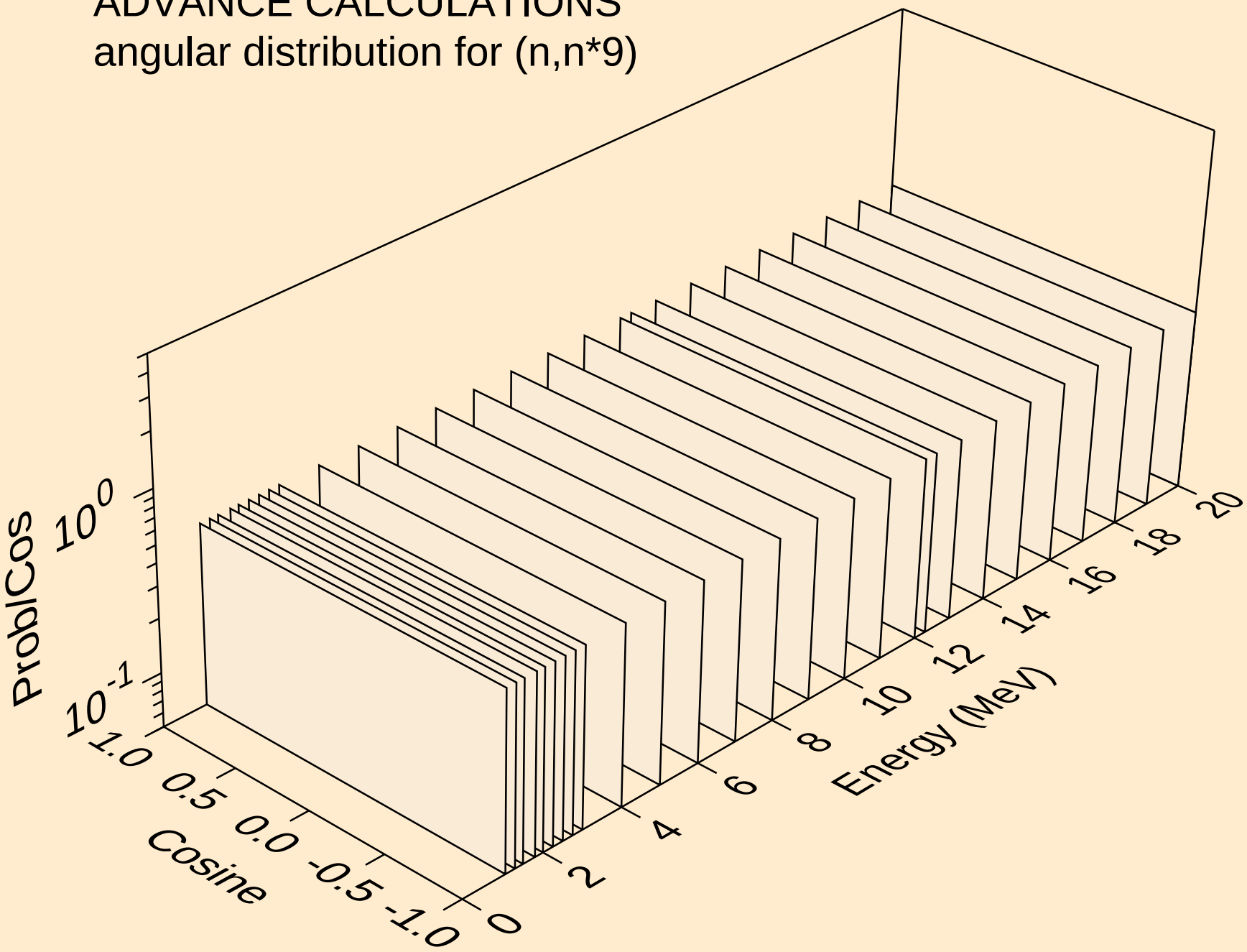
ADVANCE CALCULATIONS
angular distribution for (n,n*7)



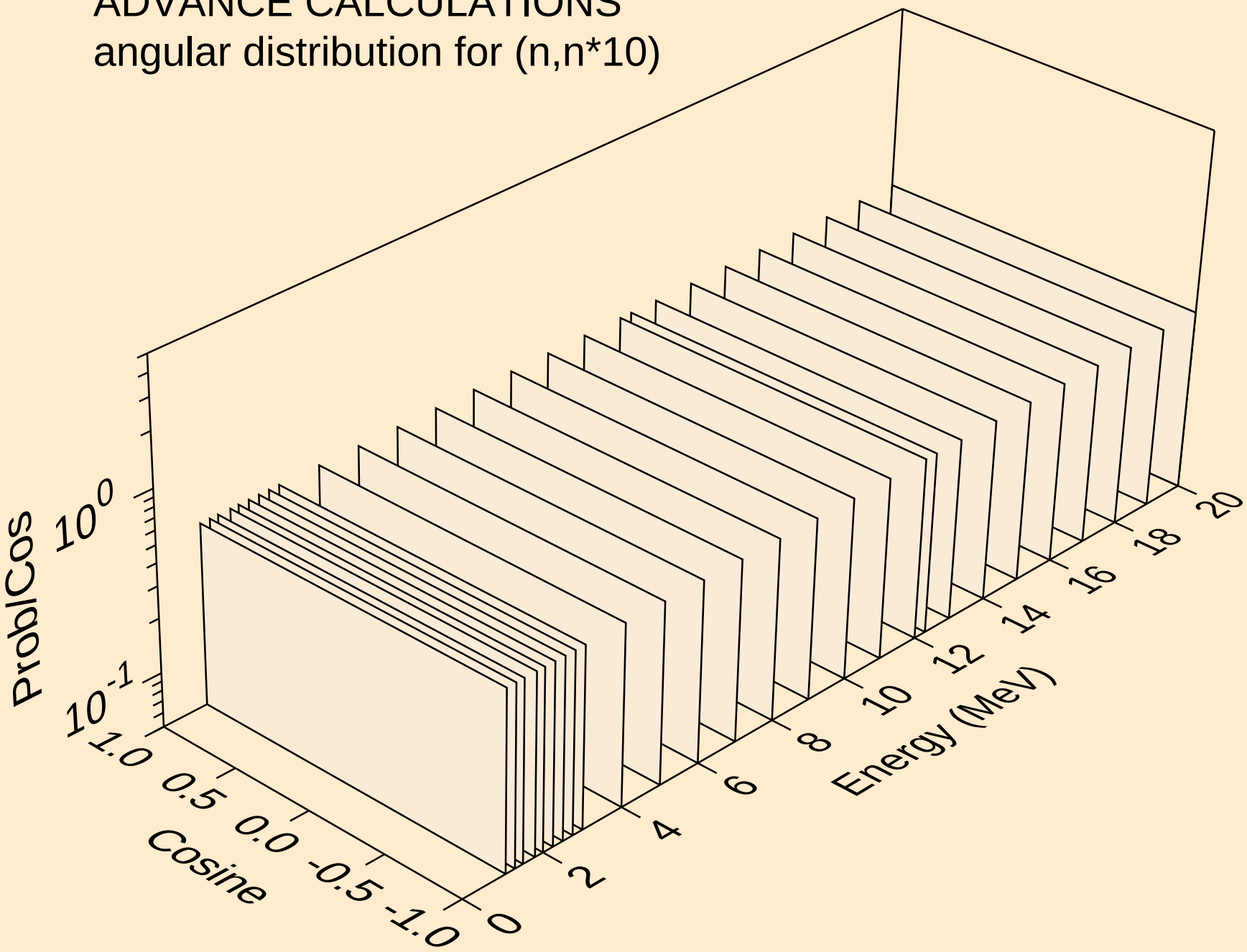
ADVANCE CALCULATIONS
angular distribution for (n,n*8)



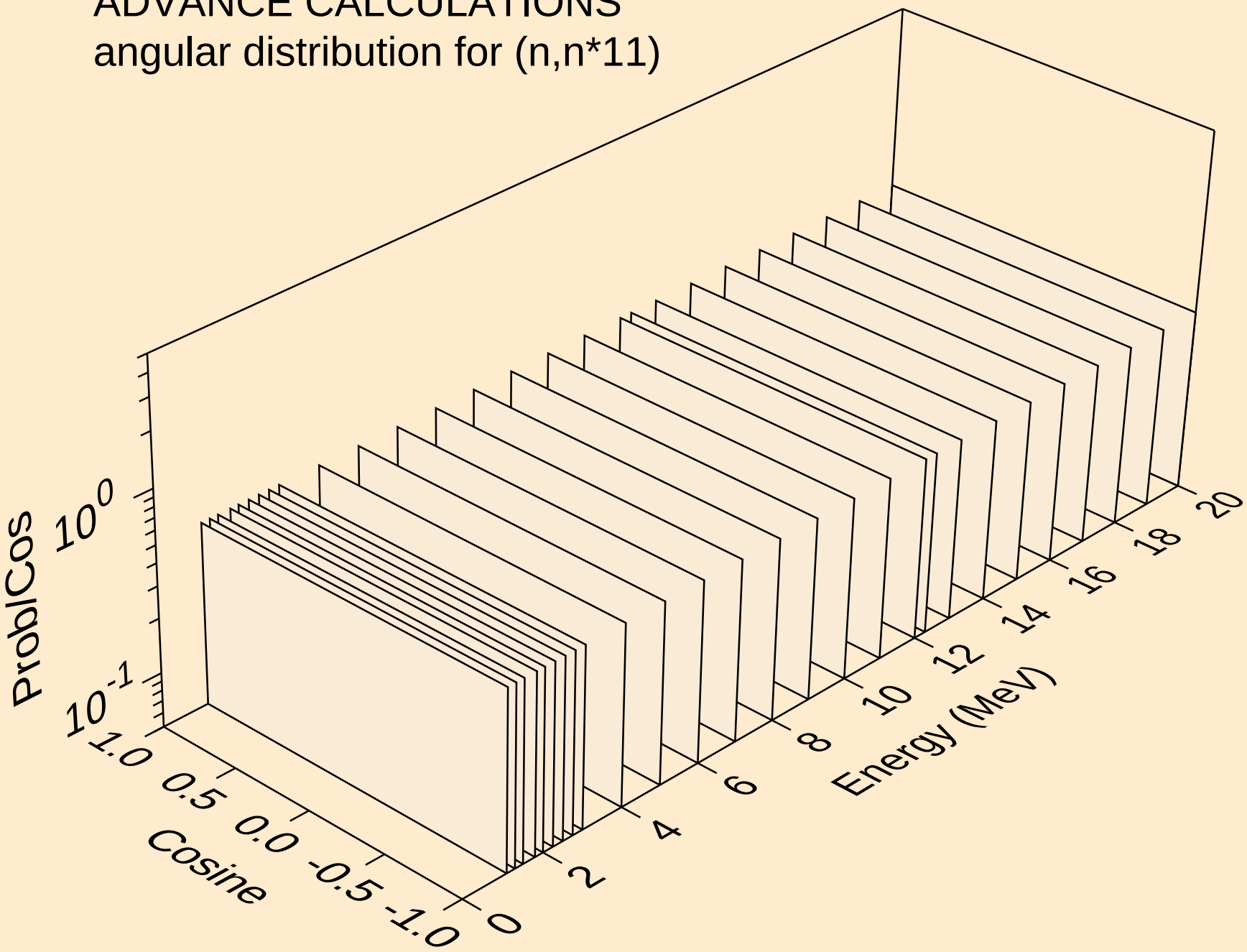
ADVANCE CALCULATIONS
angular distribution for (n,n*9)



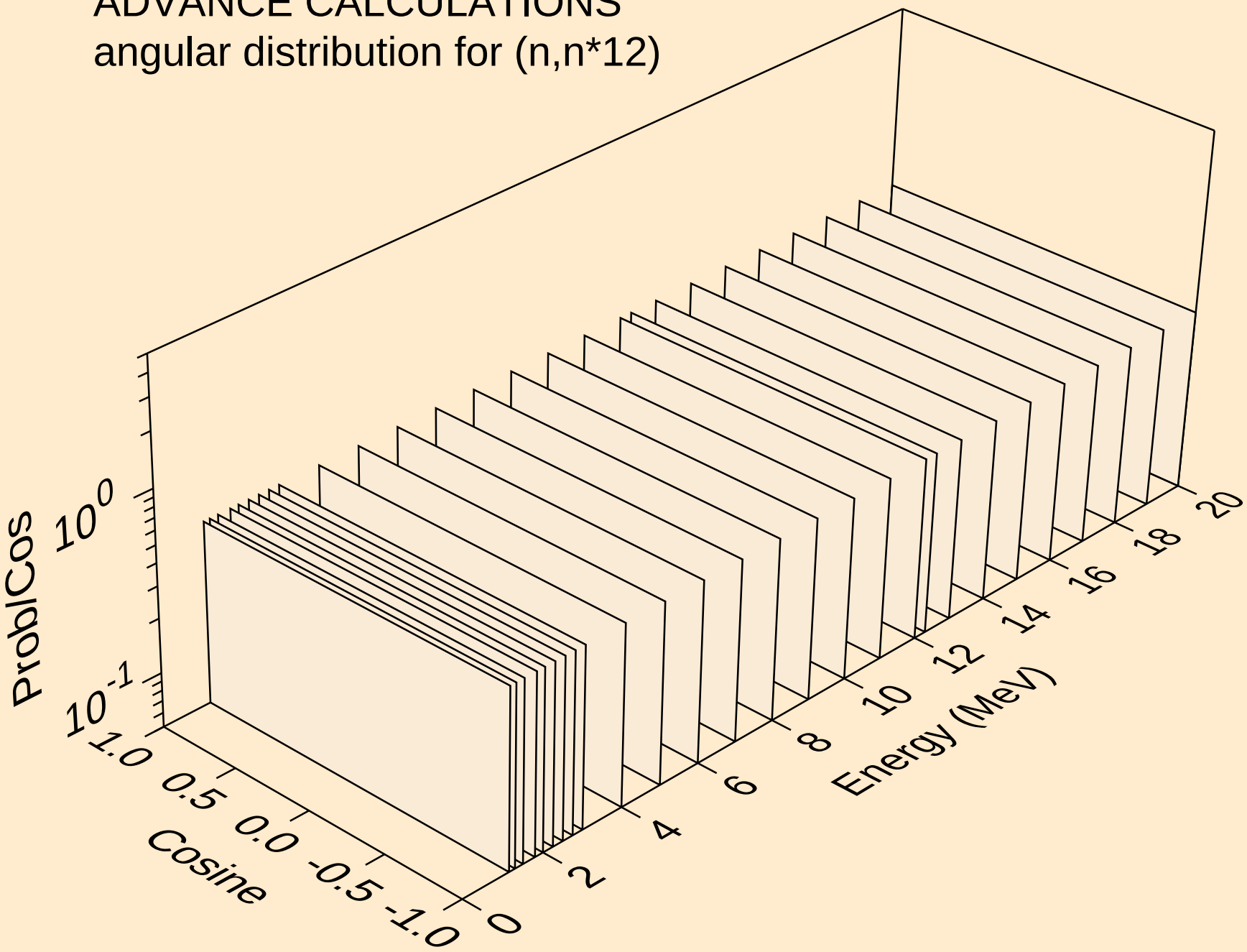
ADVANCE CALCULATIONS
angular distribution for (n,n*10)



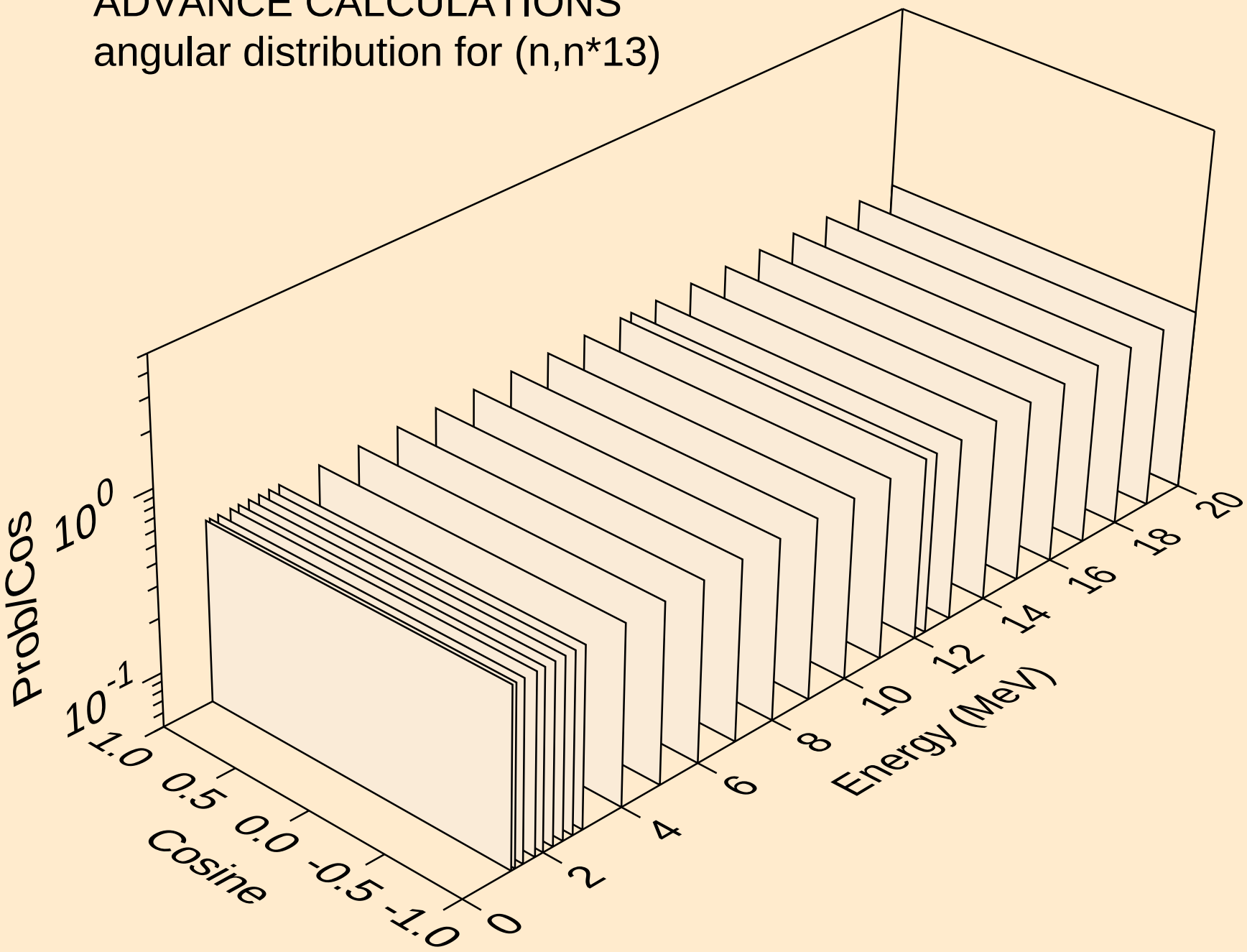
ADVANCE CALCULATIONS
angular distribution for (n,n*11)



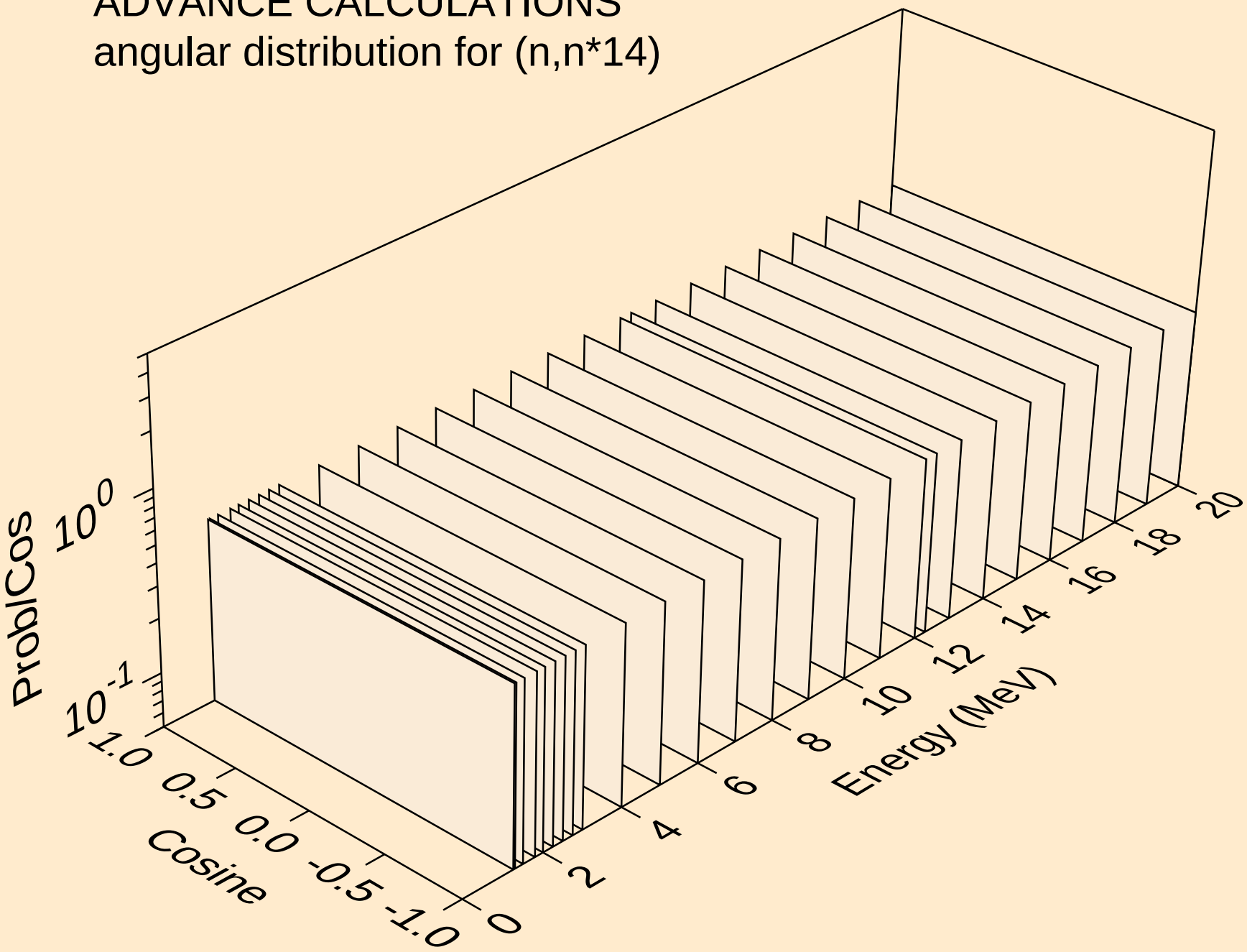
ADVANCE CALCULATIONS
angular distribution for (n,n*12)



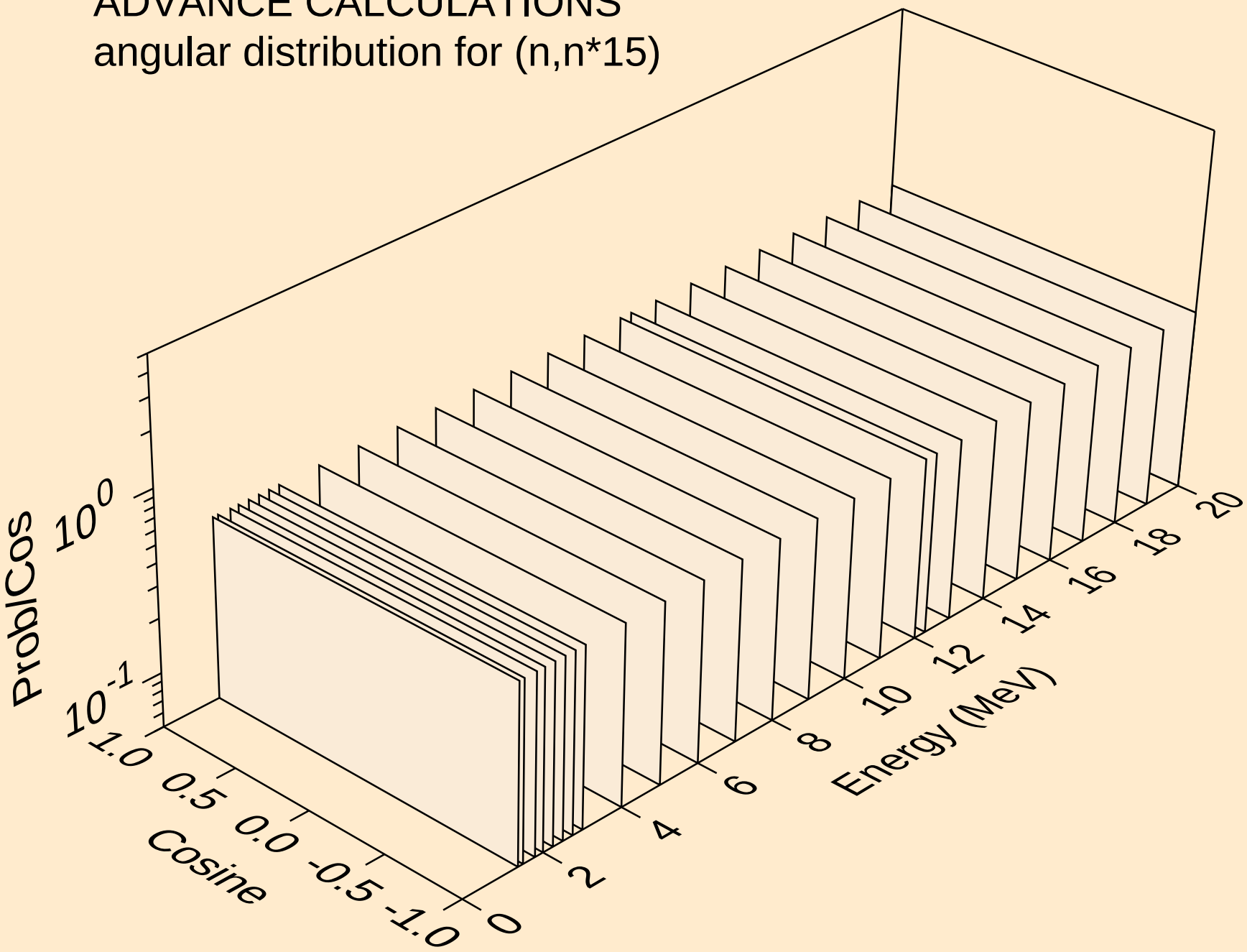
ADVANCE CALCULATIONS
angular distribution for (n,n*13)



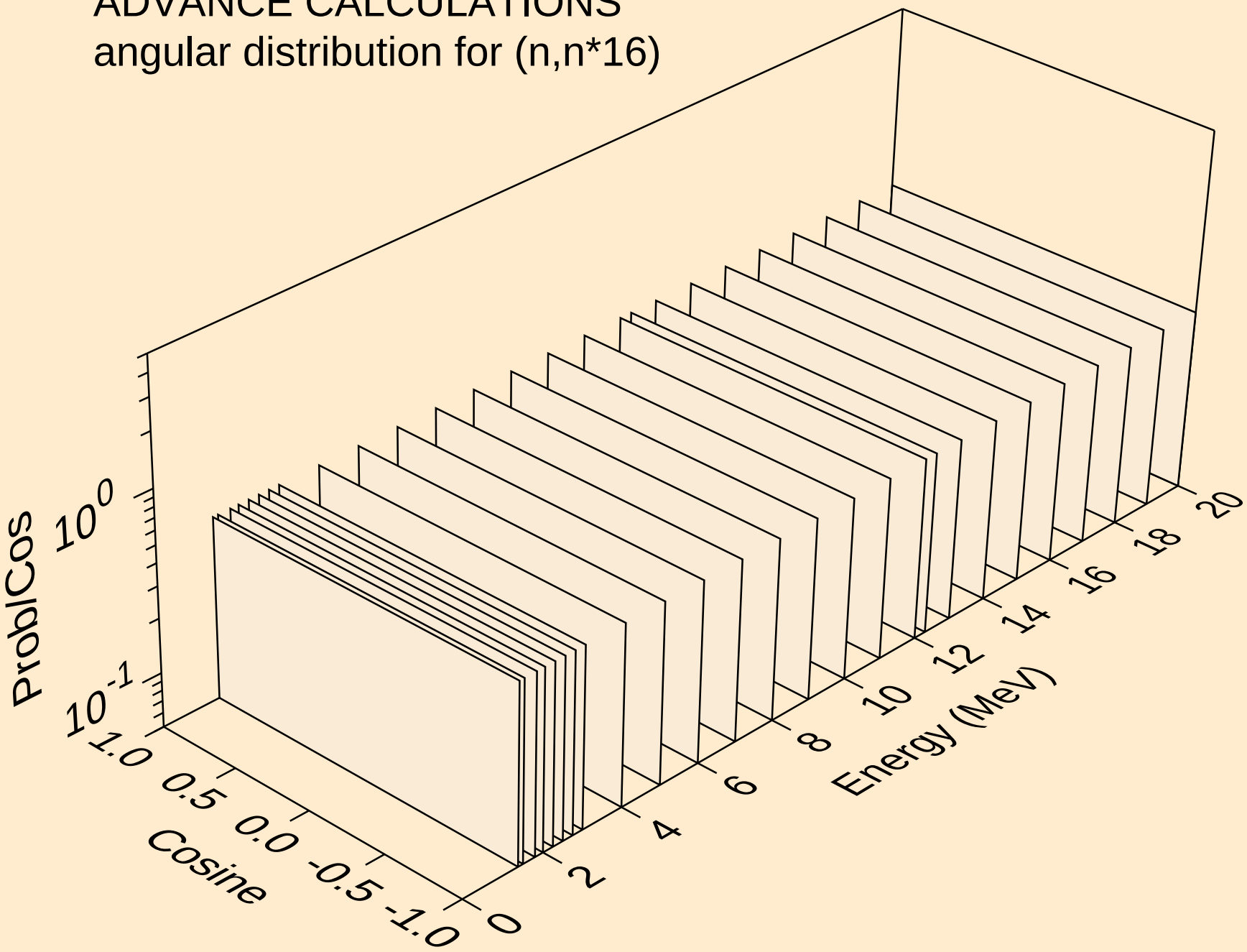
ADVANCE CALCULATIONS
angular distribution for (n,n*14)



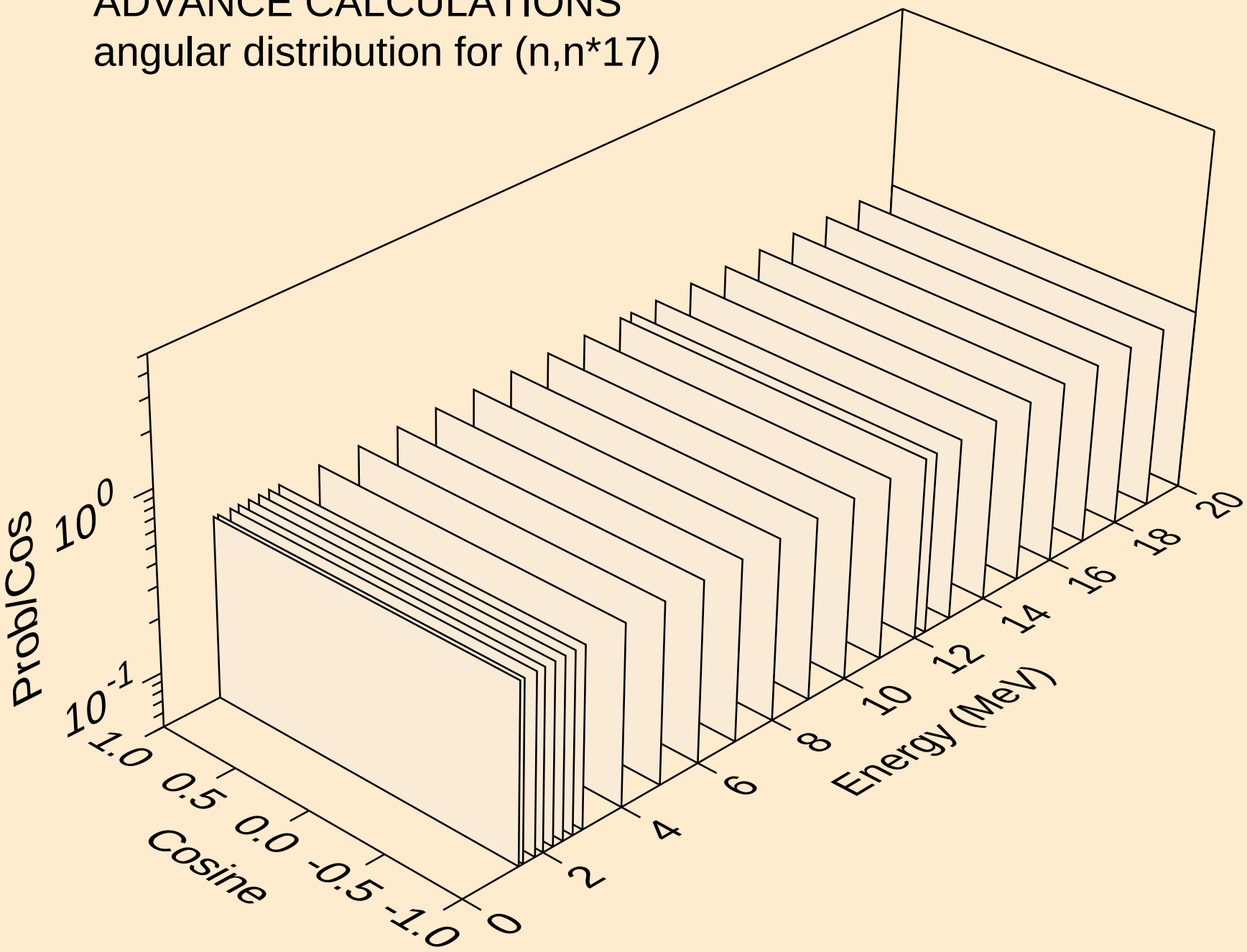
ADVANCE CALCULATIONS
angular distribution for (n,n*15)



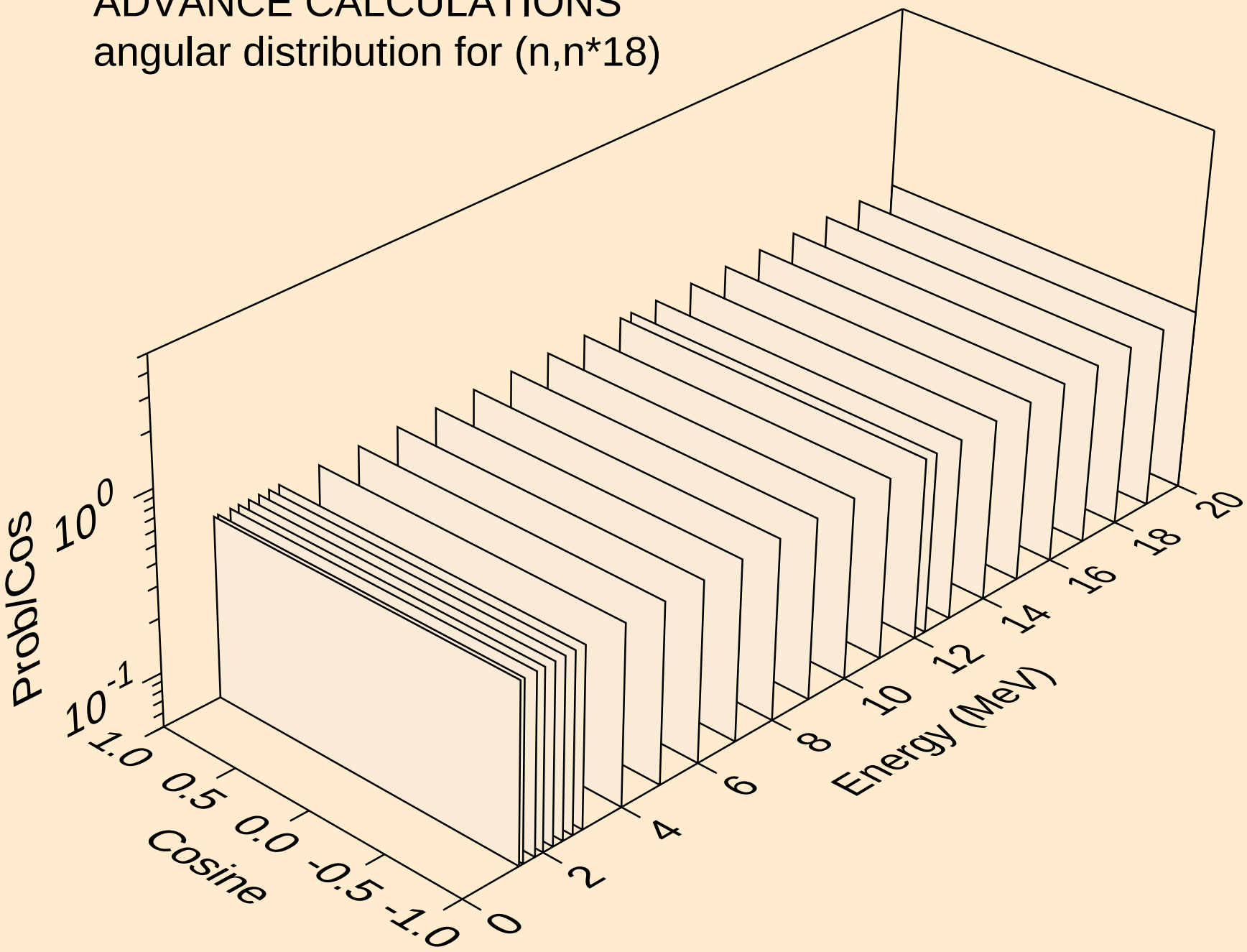
ADVANCE CALCULATIONS
angular distribution for (n,n*16)



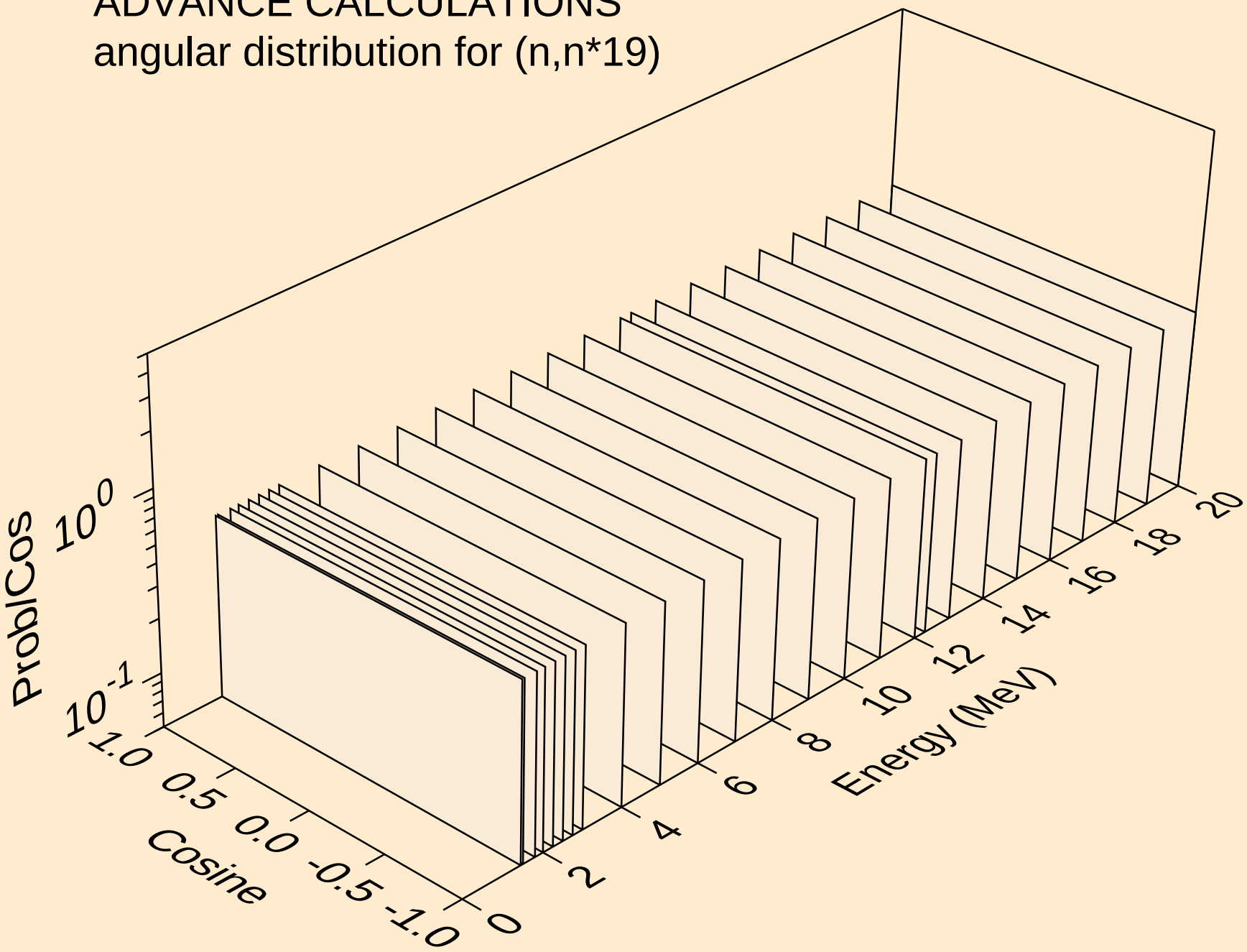
ADVANCE CALCULATIONS
angular distribution for (n,n*17)



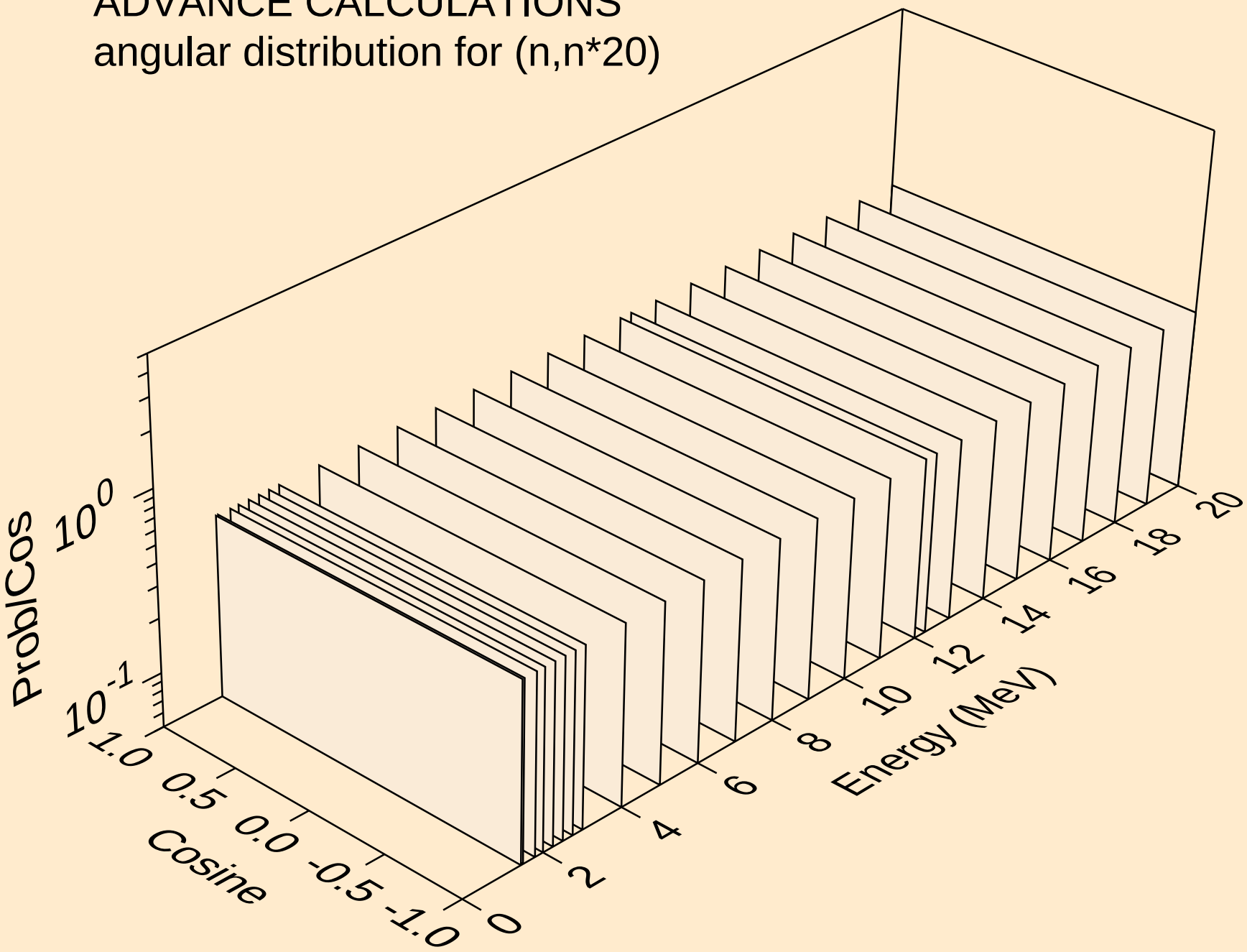
ADVANCE CALCULATIONS
angular distribution for (n,n*18)



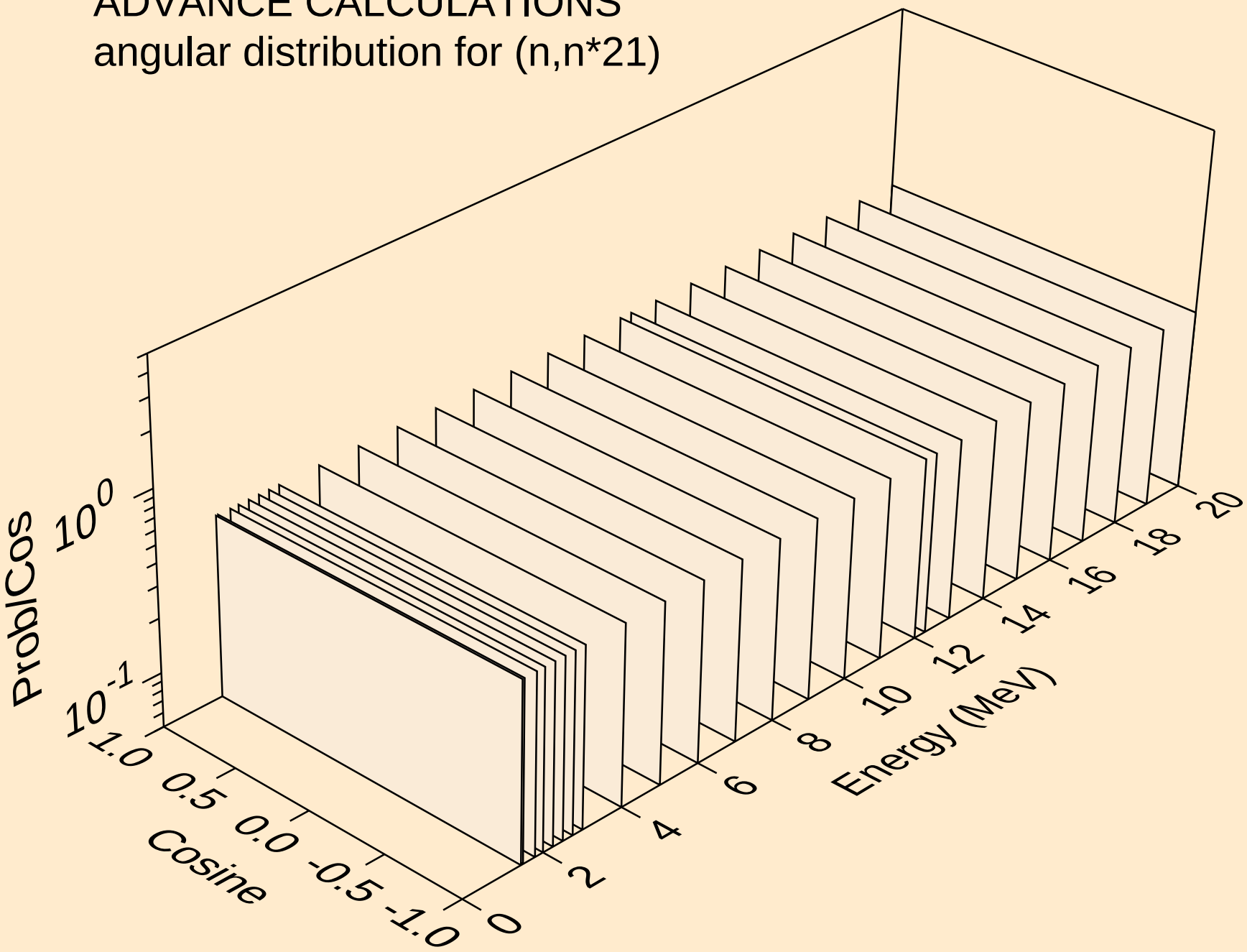
ADVANCE CALCULATIONS
angular distribution for (n,n*19)



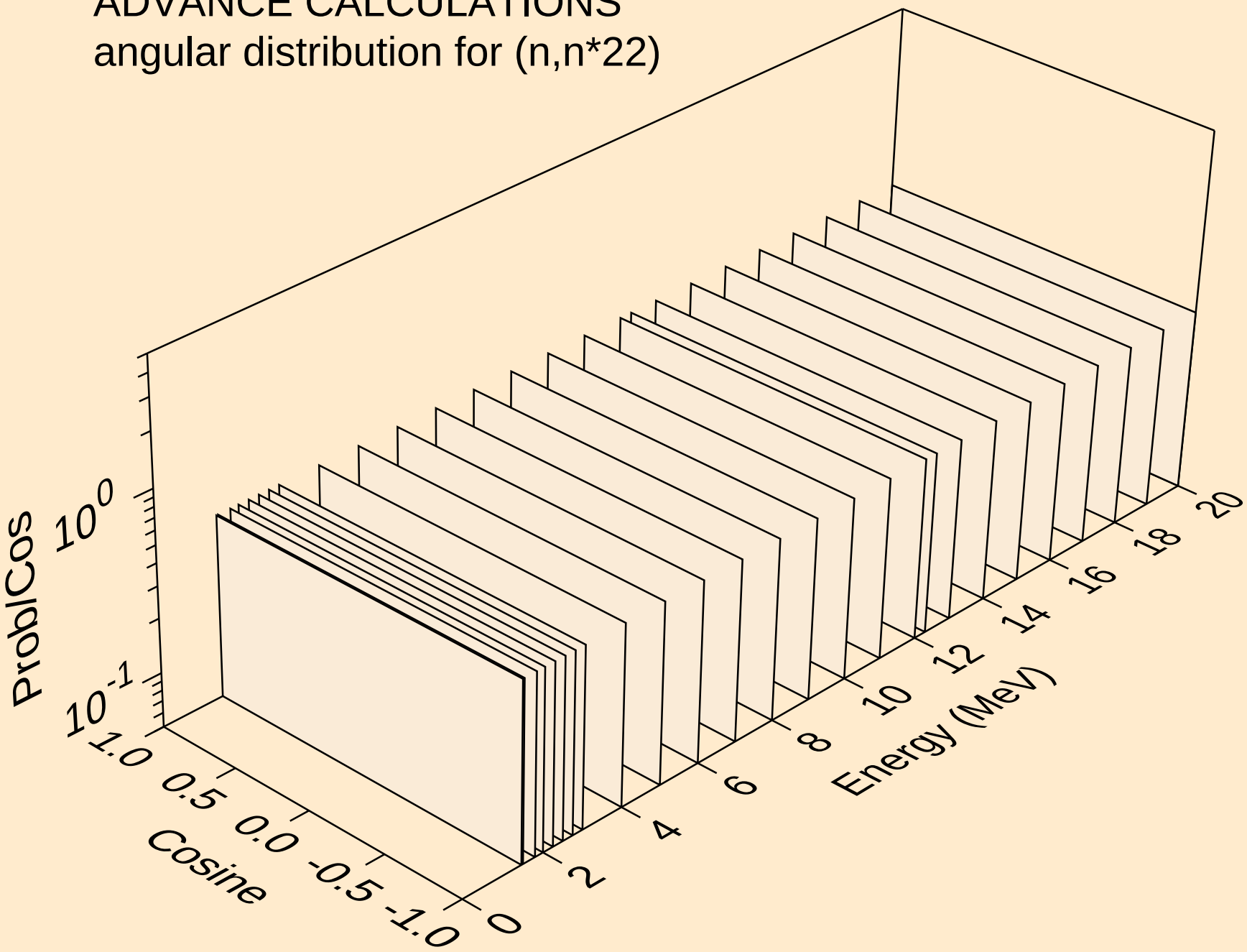
ADVANCE CALCULATIONS
angular distribution for (n,n*20)



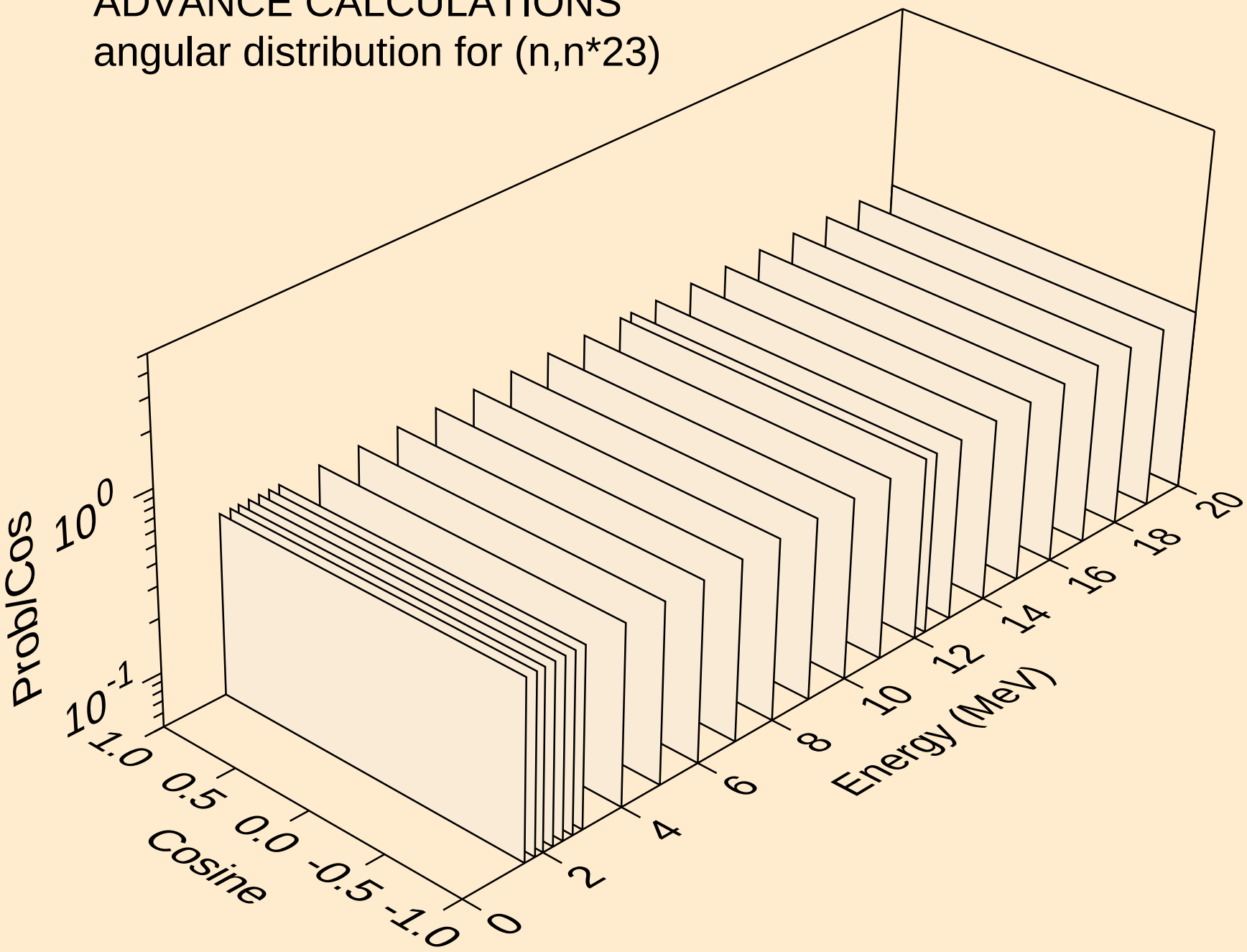
ADVANCE CALCULATIONS
angular distribution for (n,n*21)



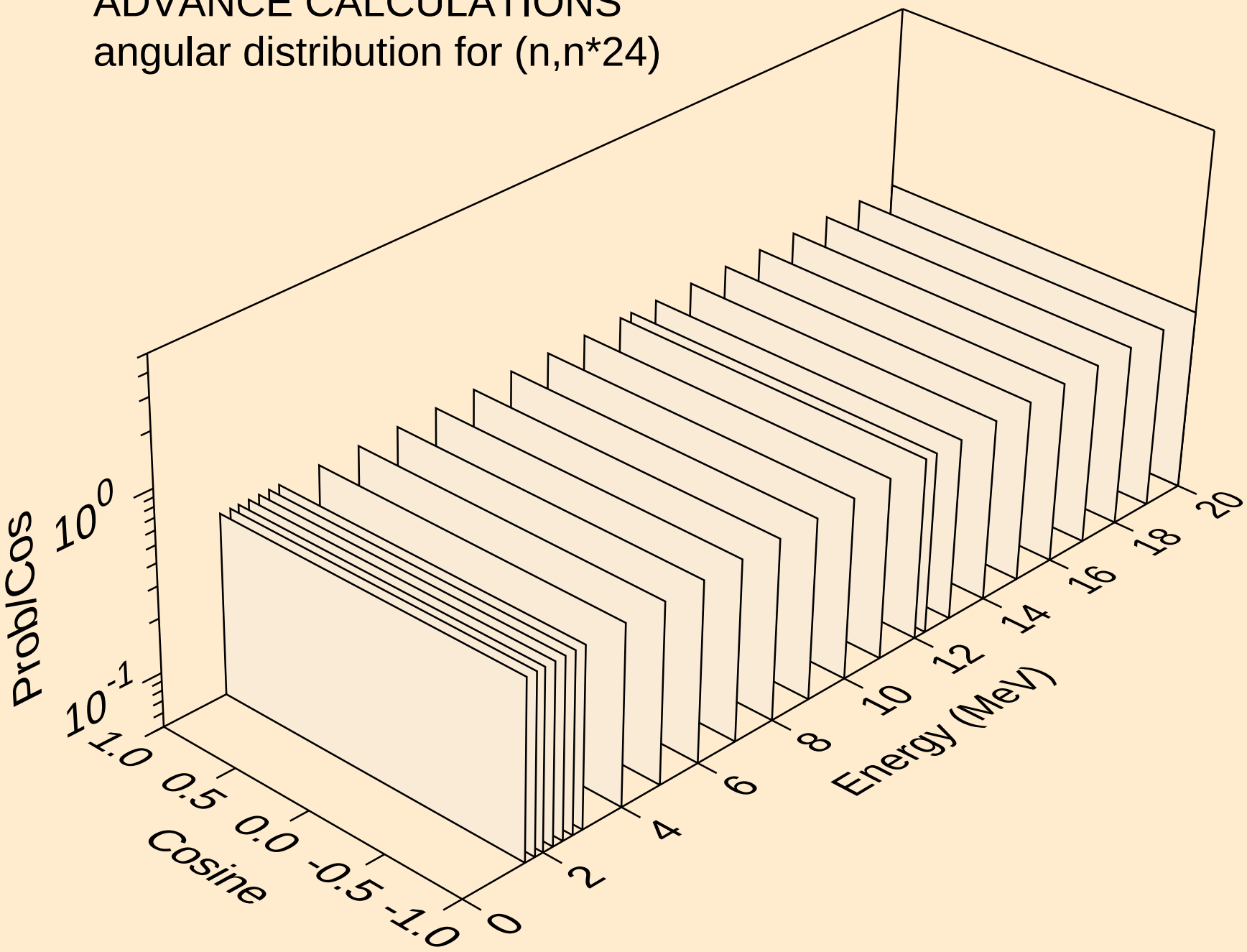
ADVANCE CALCULATIONS
angular distribution for (n,n*22)



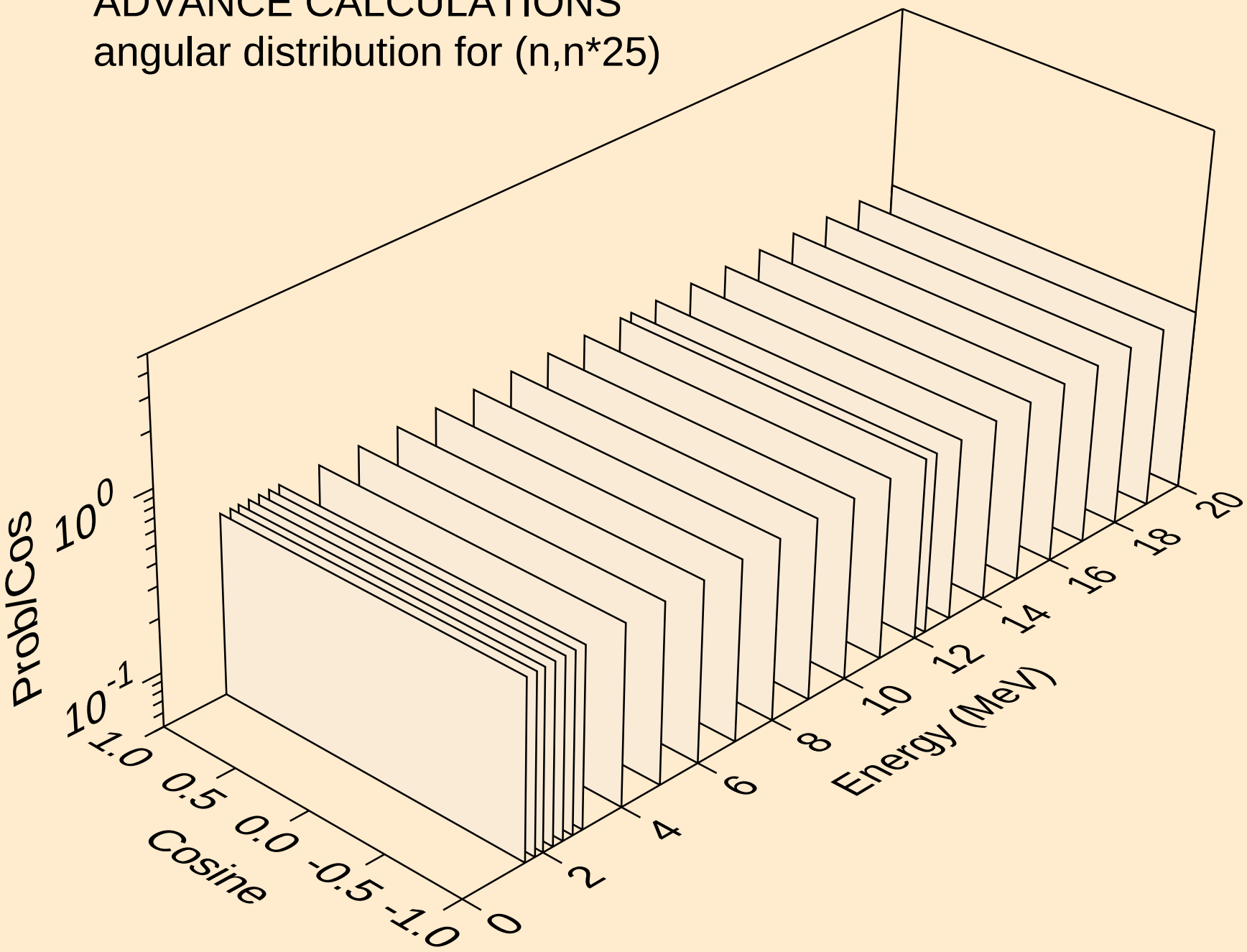
ADVANCE CALCULATIONS
angular distribution for (n,n*23)



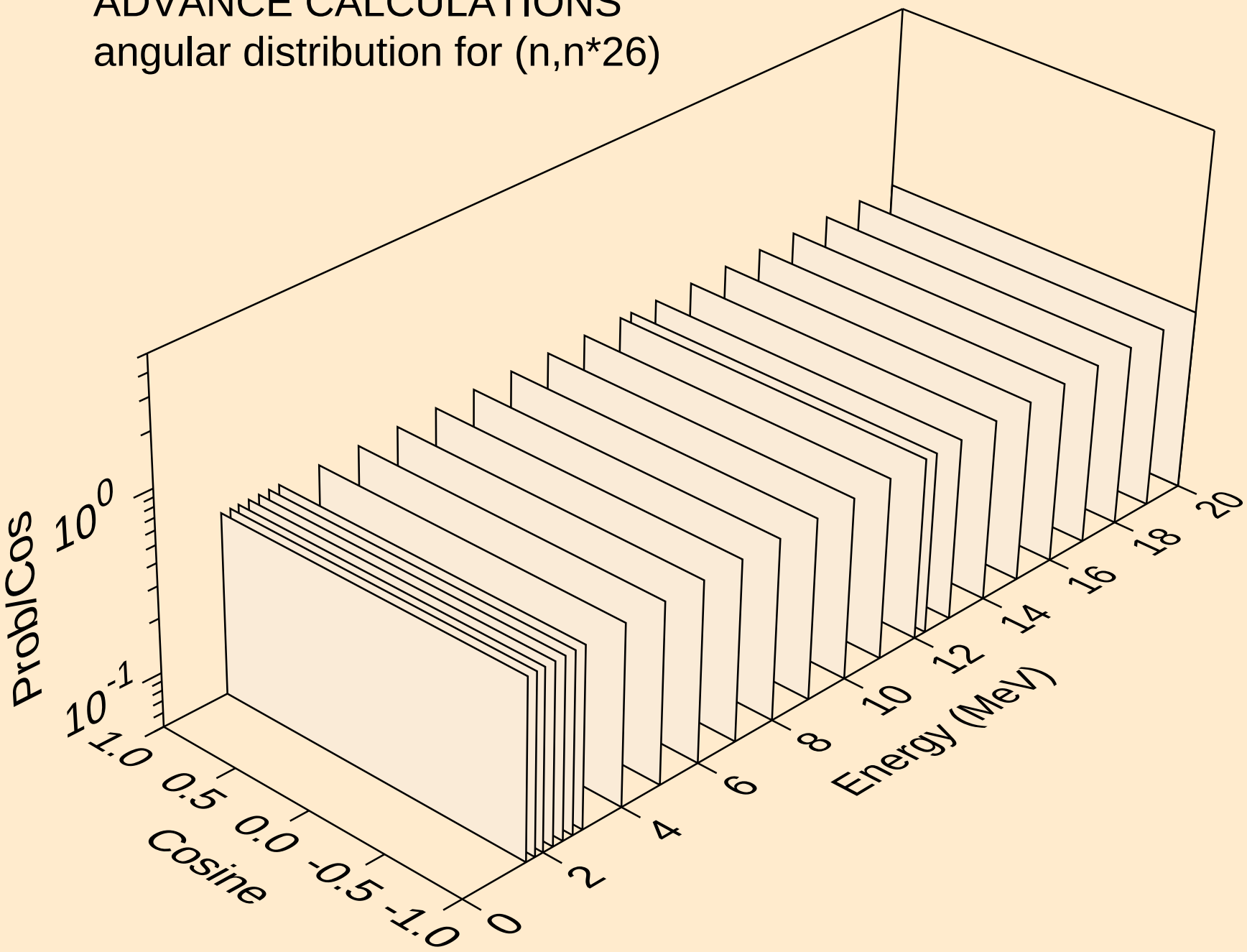
ADVANCE CALCULATIONS
angular distribution for (n,n*24)



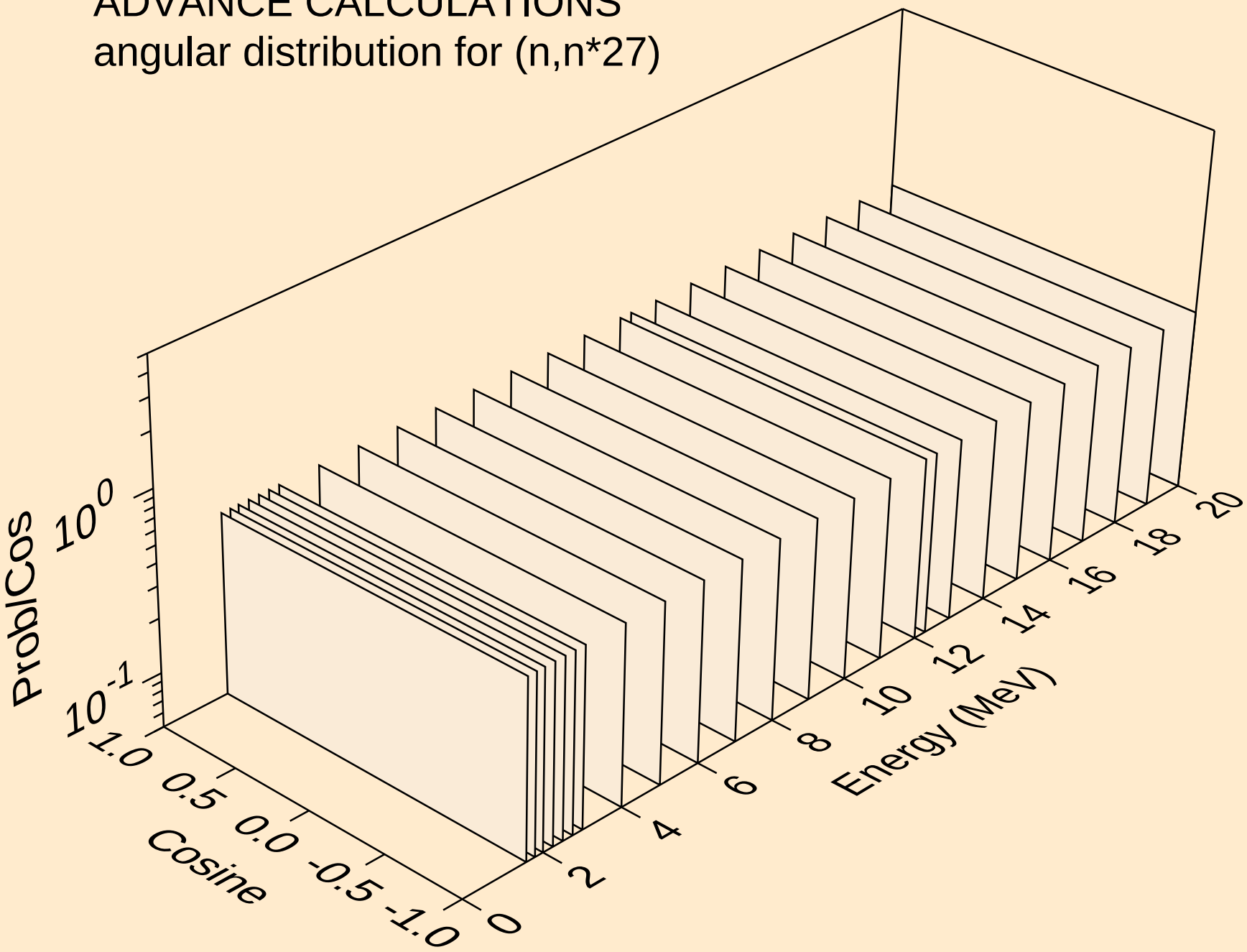
ADVANCE CALCULATIONS
angular distribution for (n,n*25)



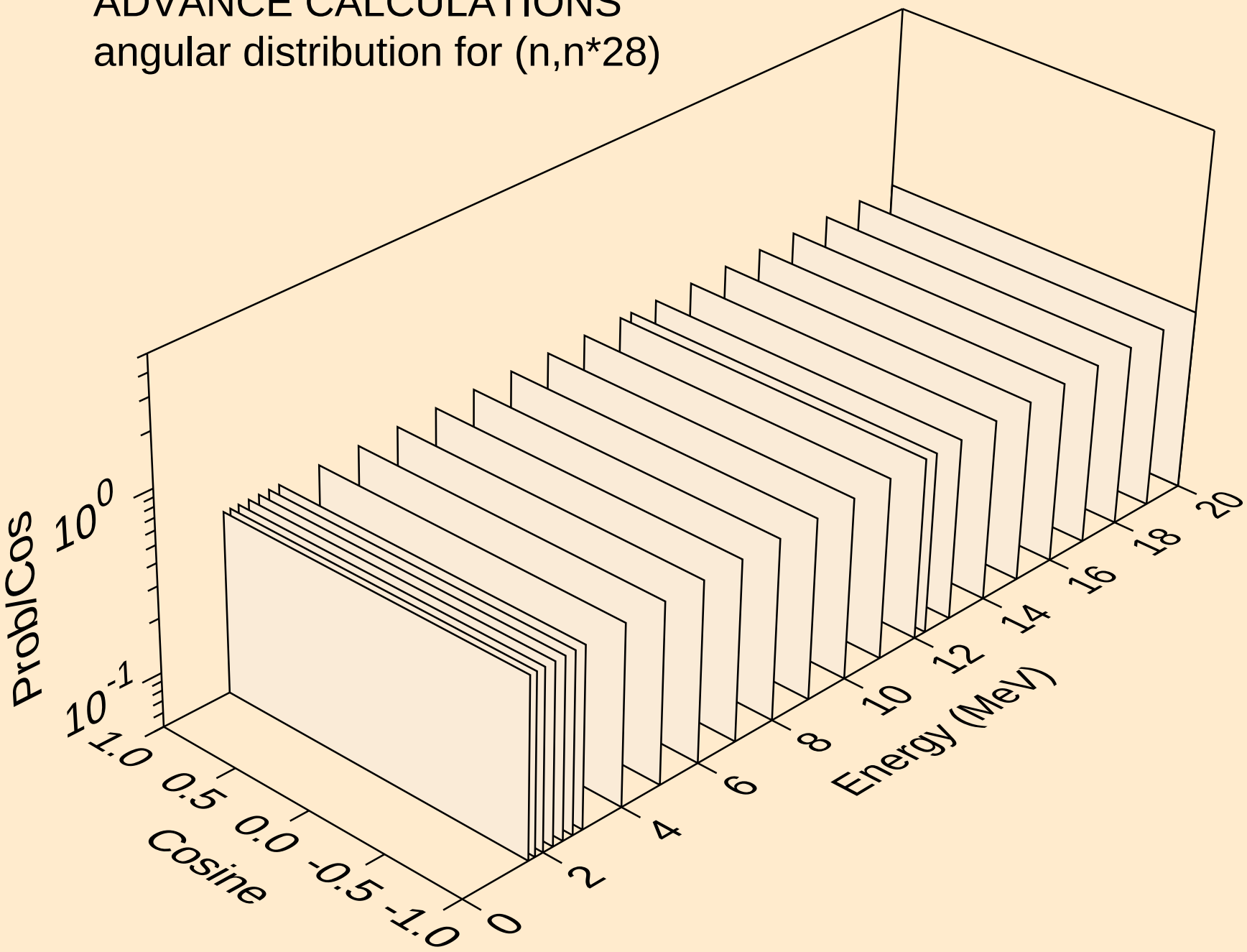
ADVANCE CALCULATIONS
angular distribution for (n,n*26)



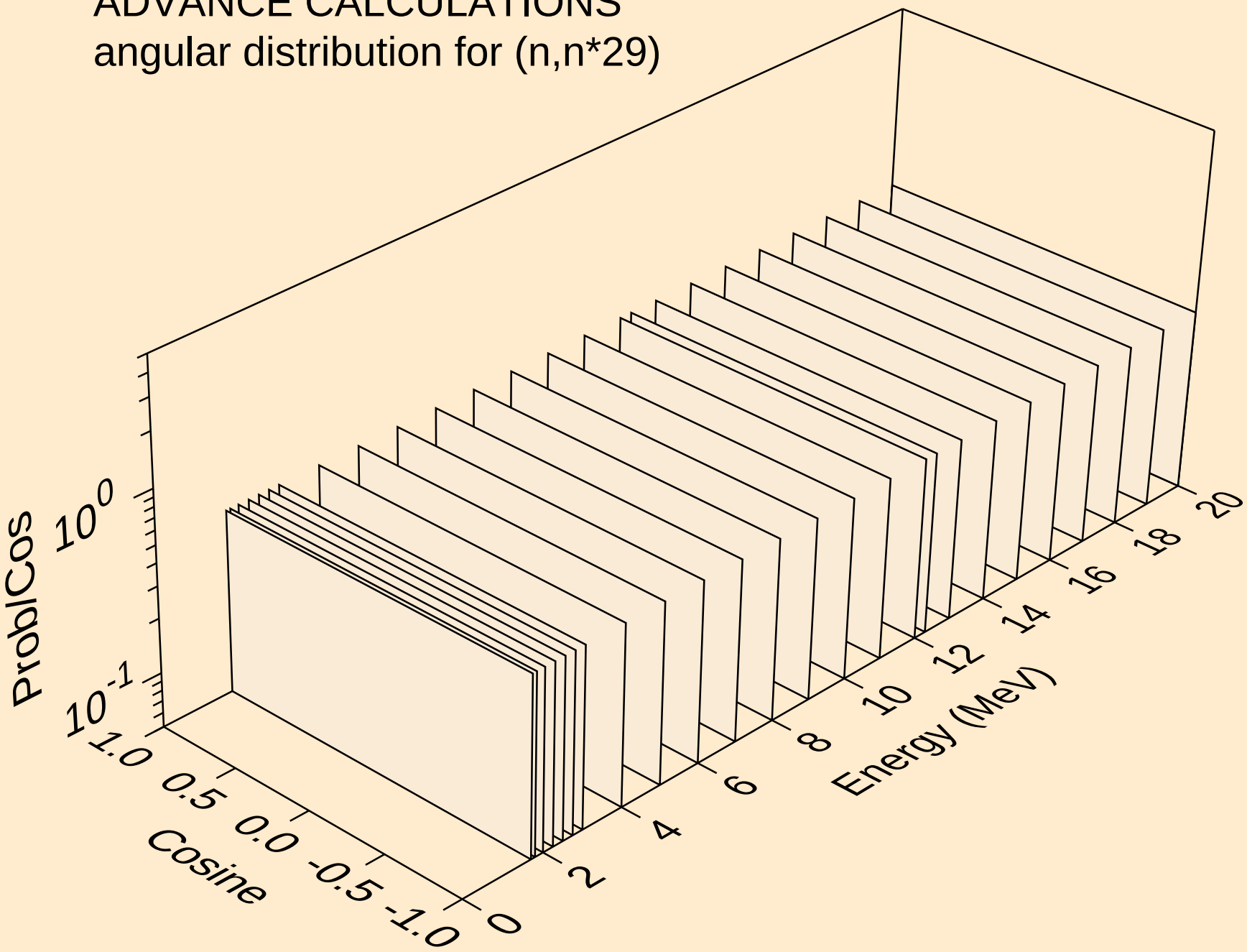
ADVANCE CALCULATIONS
angular distribution for (n,n*27)



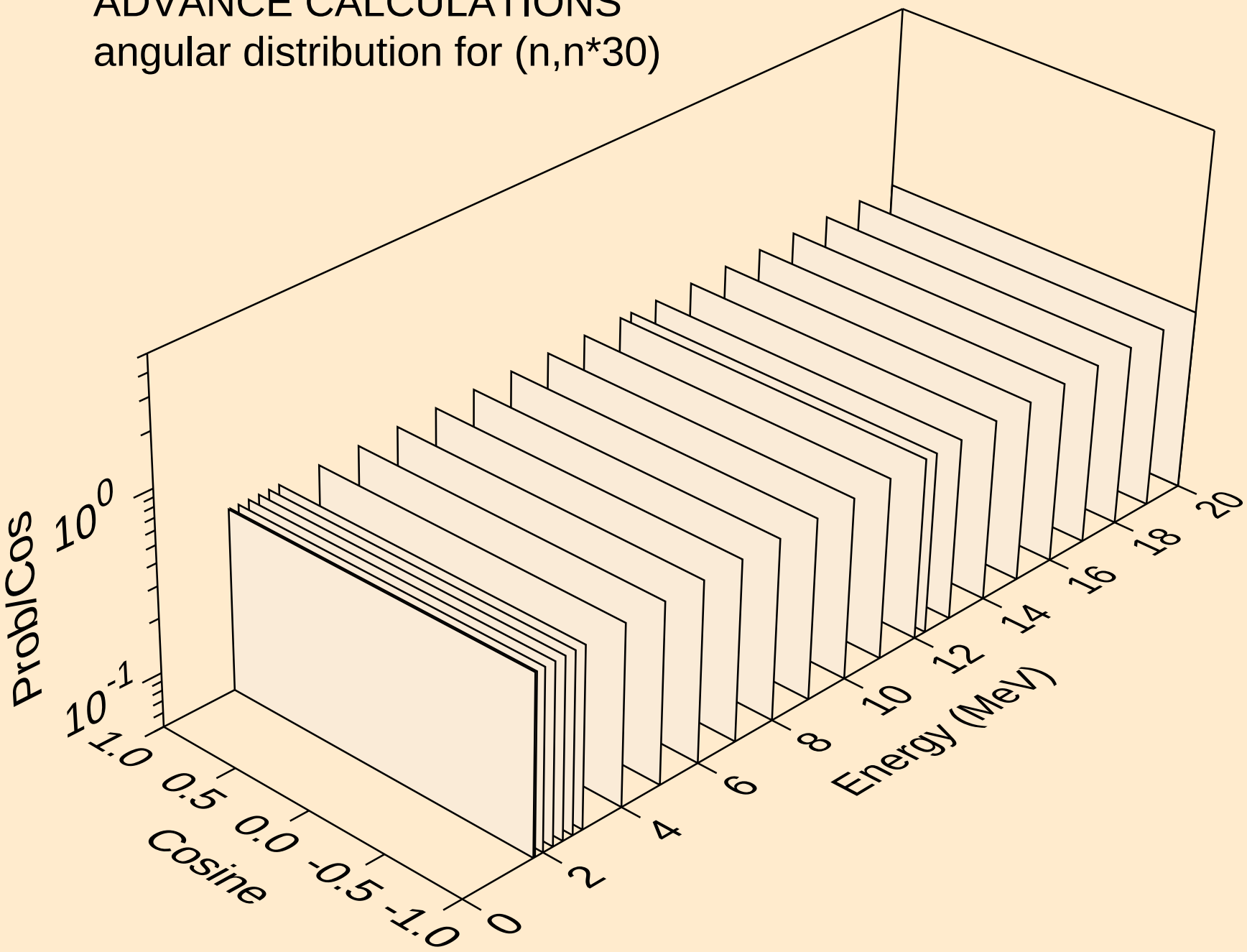
ADVANCE CALCULATIONS
angular distribution for (n,n*28)



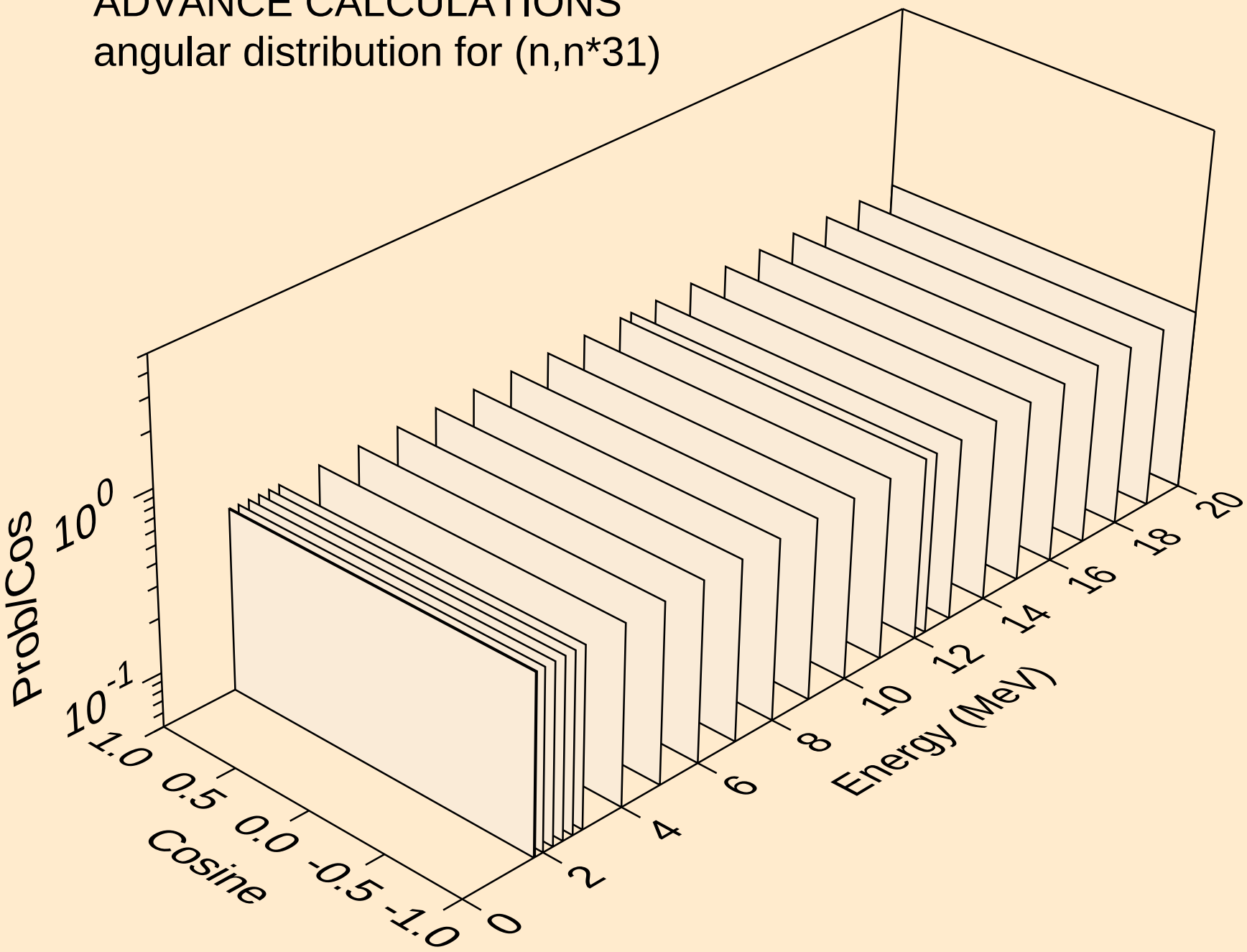
ADVANCE CALCULATIONS
angular distribution for (n,n*29)



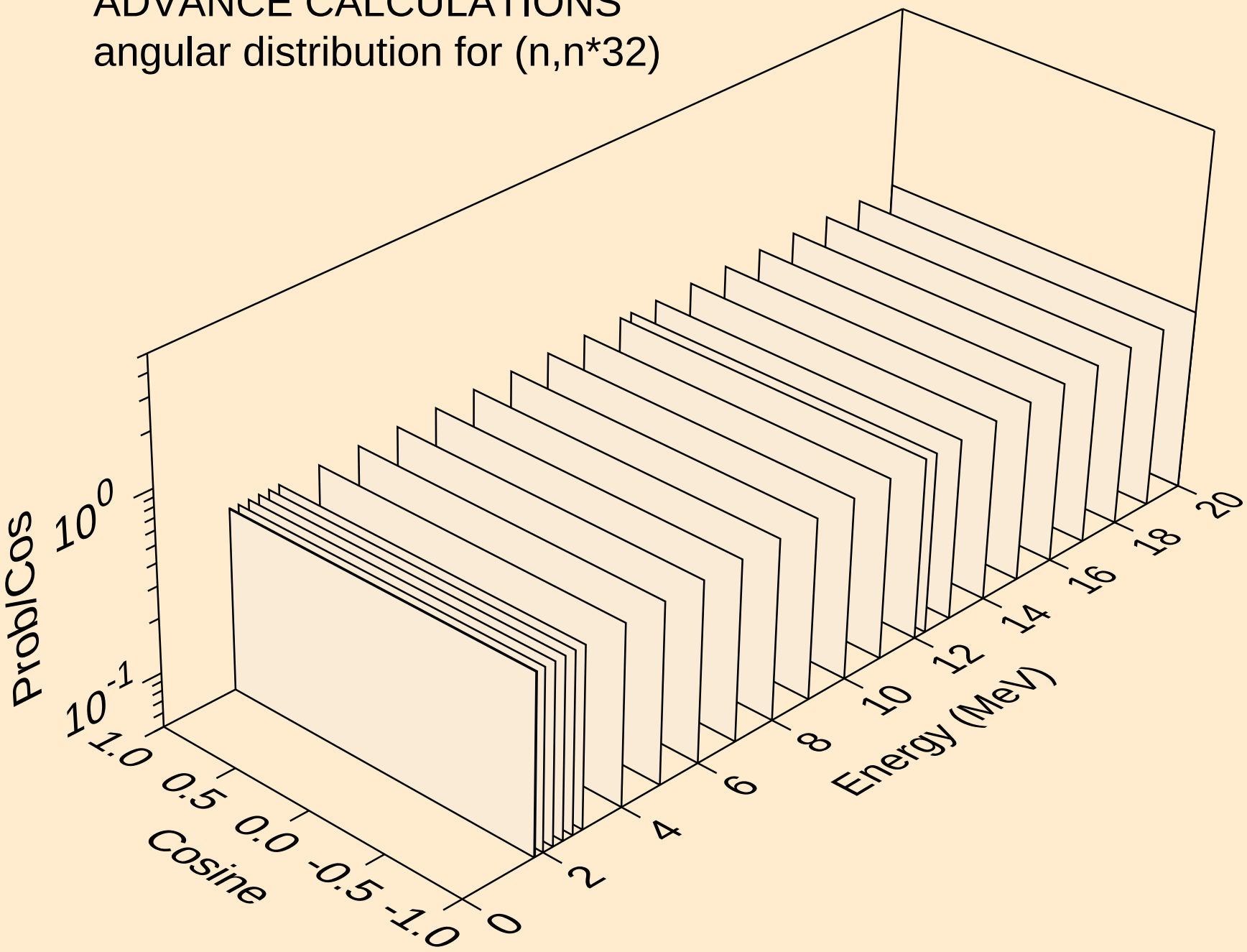
ADVANCE CALCULATIONS
angular distribution for (n,n*30)



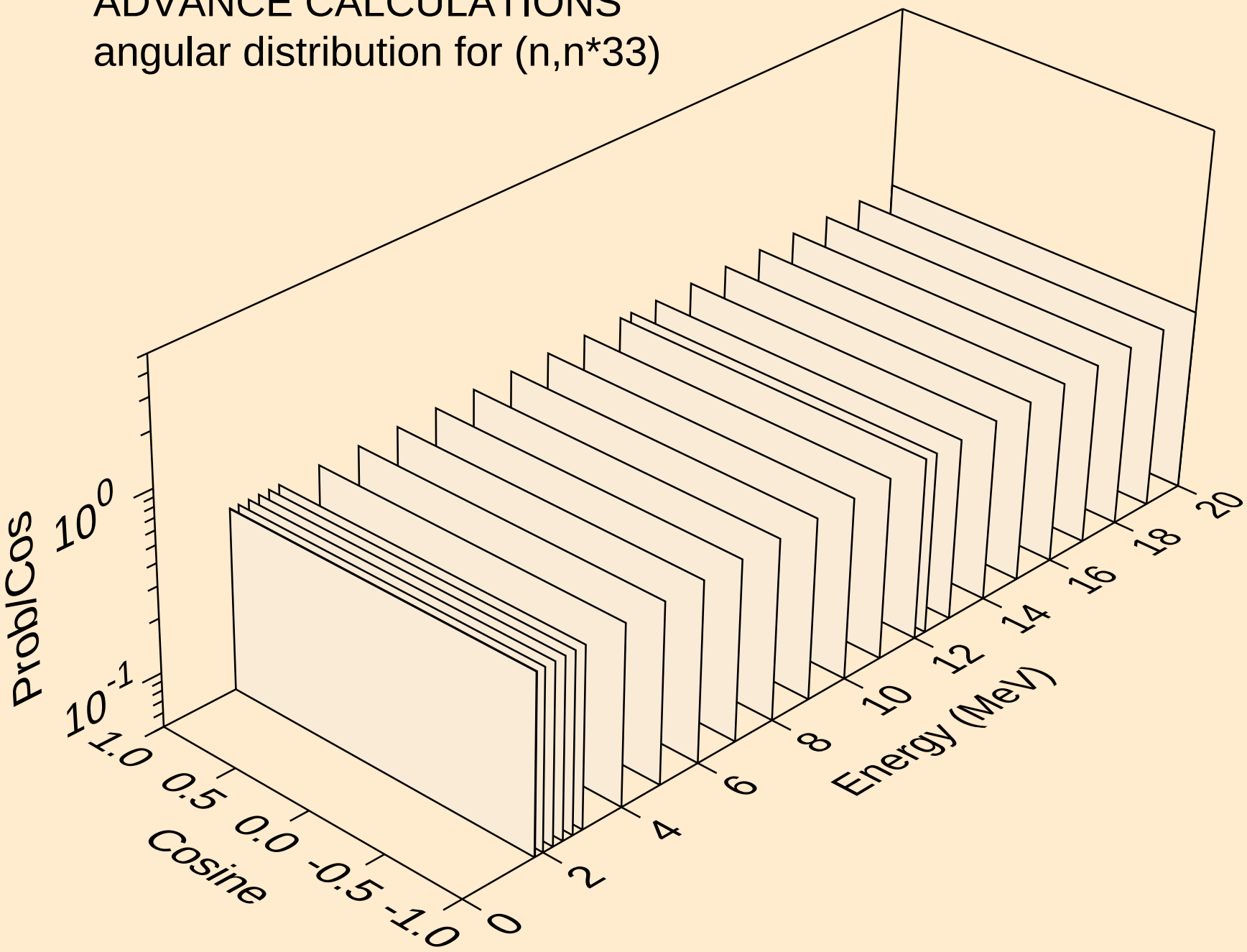
ADVANCE CALCULATIONS
angular distribution for (n,n*31)



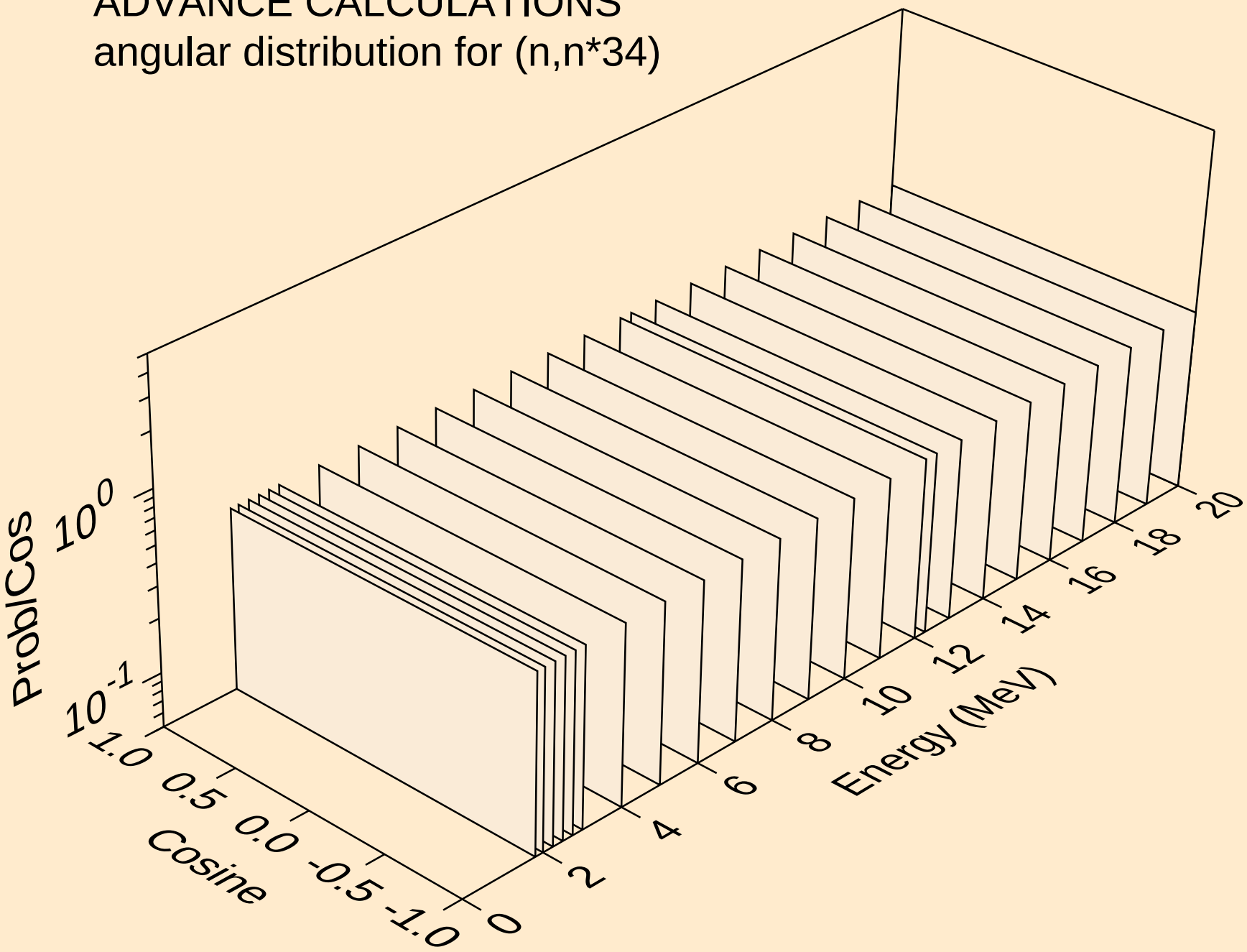
ADVANCE CALCULATIONS
angular distribution for (n,n*32)



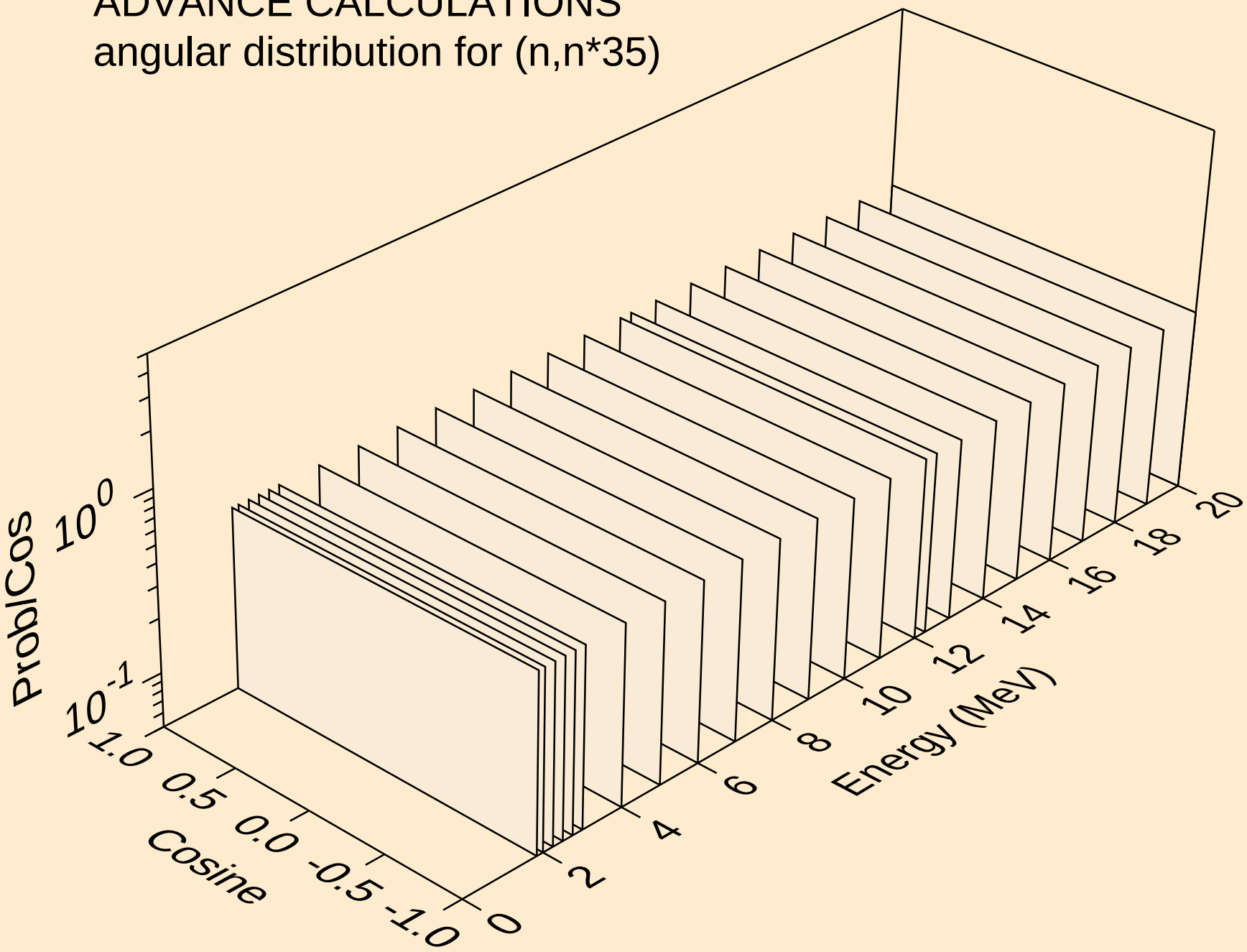
ADVANCE CALCULATIONS
angular distribution for (n,n*33)



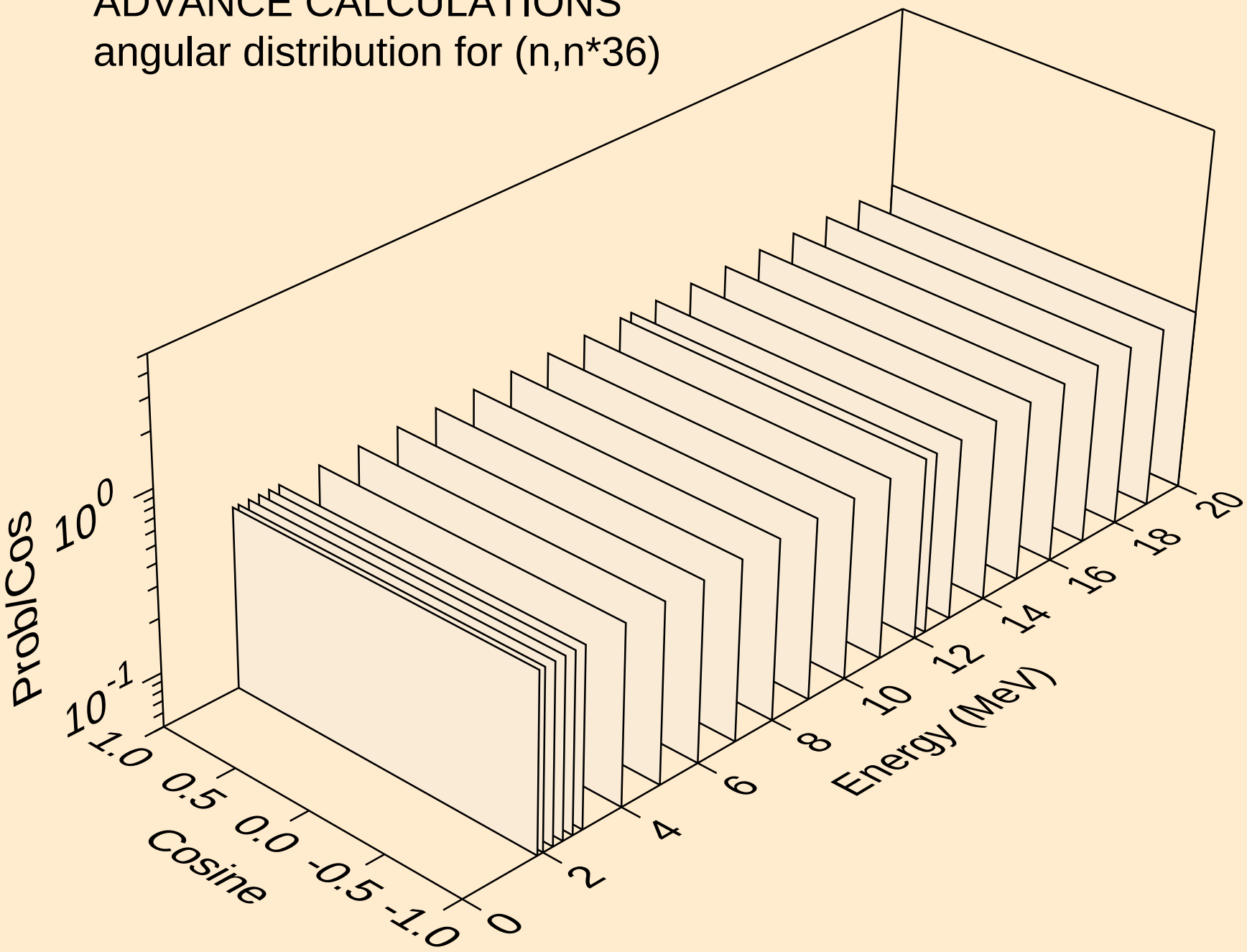
ADVANCE CALCULATIONS
angular distribution for (n,n*34)



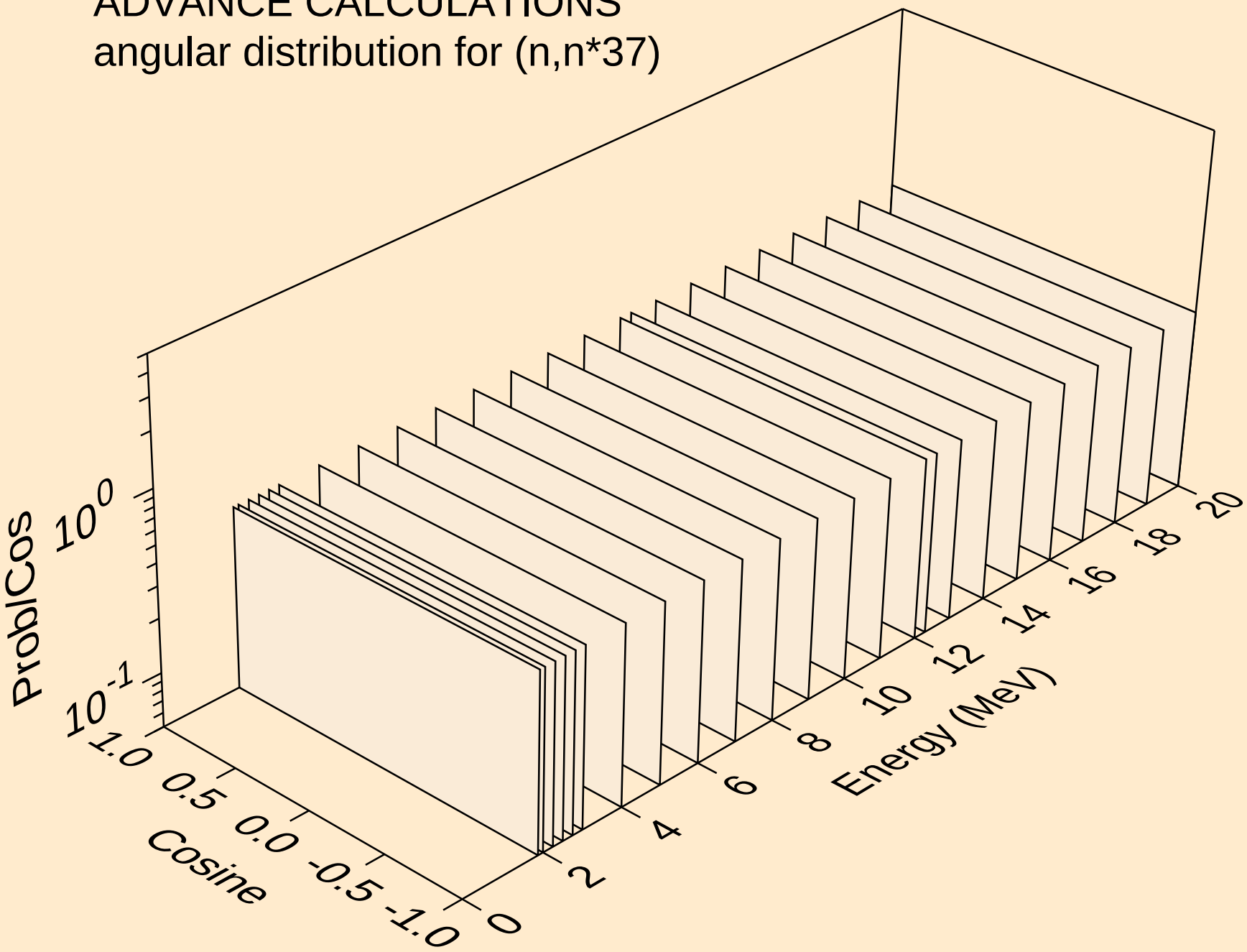
ADVANCE CALCULATIONS
angular distribution for (n,n*35)



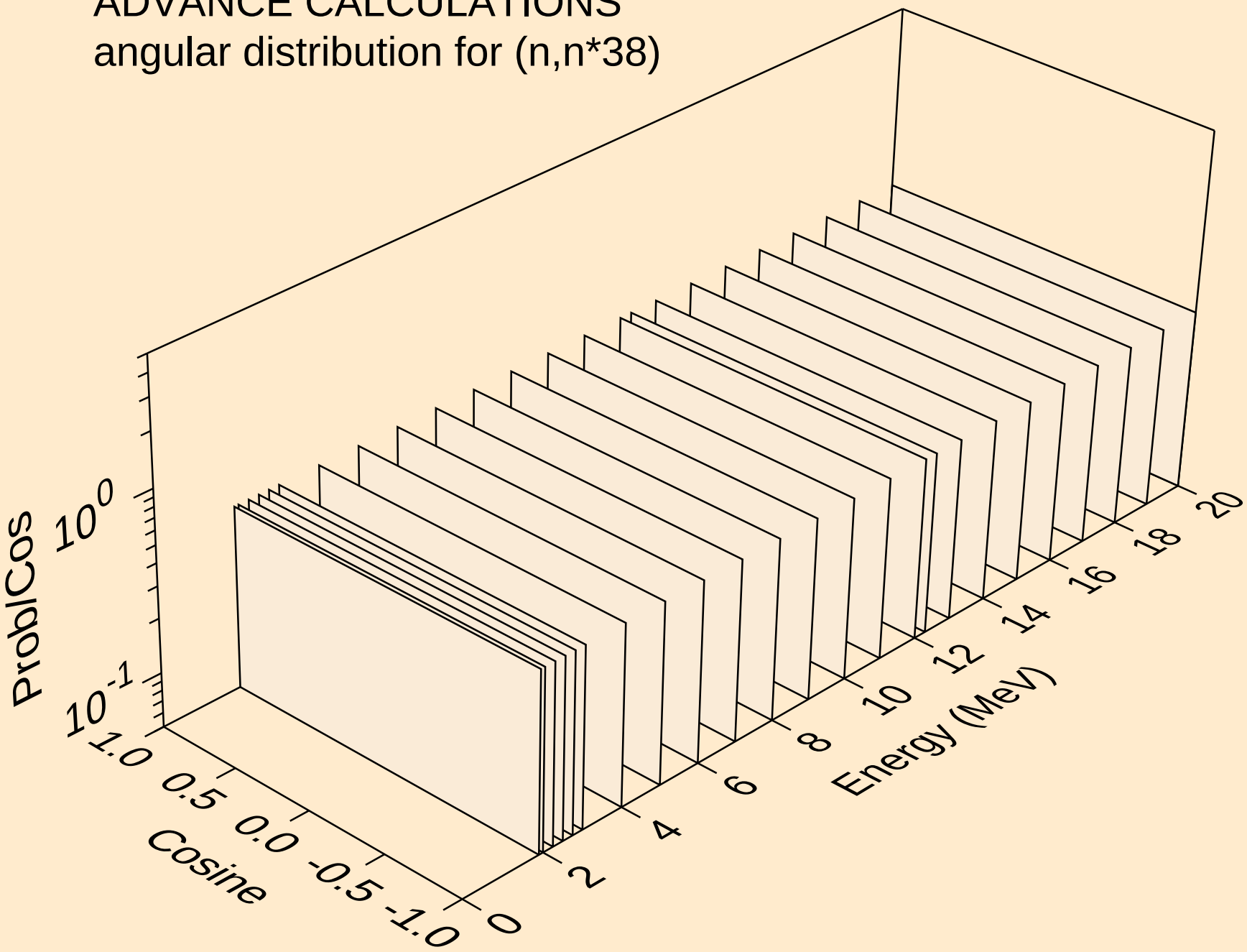
ADVANCE CALCULATIONS
angular distribution for (n,n*36)



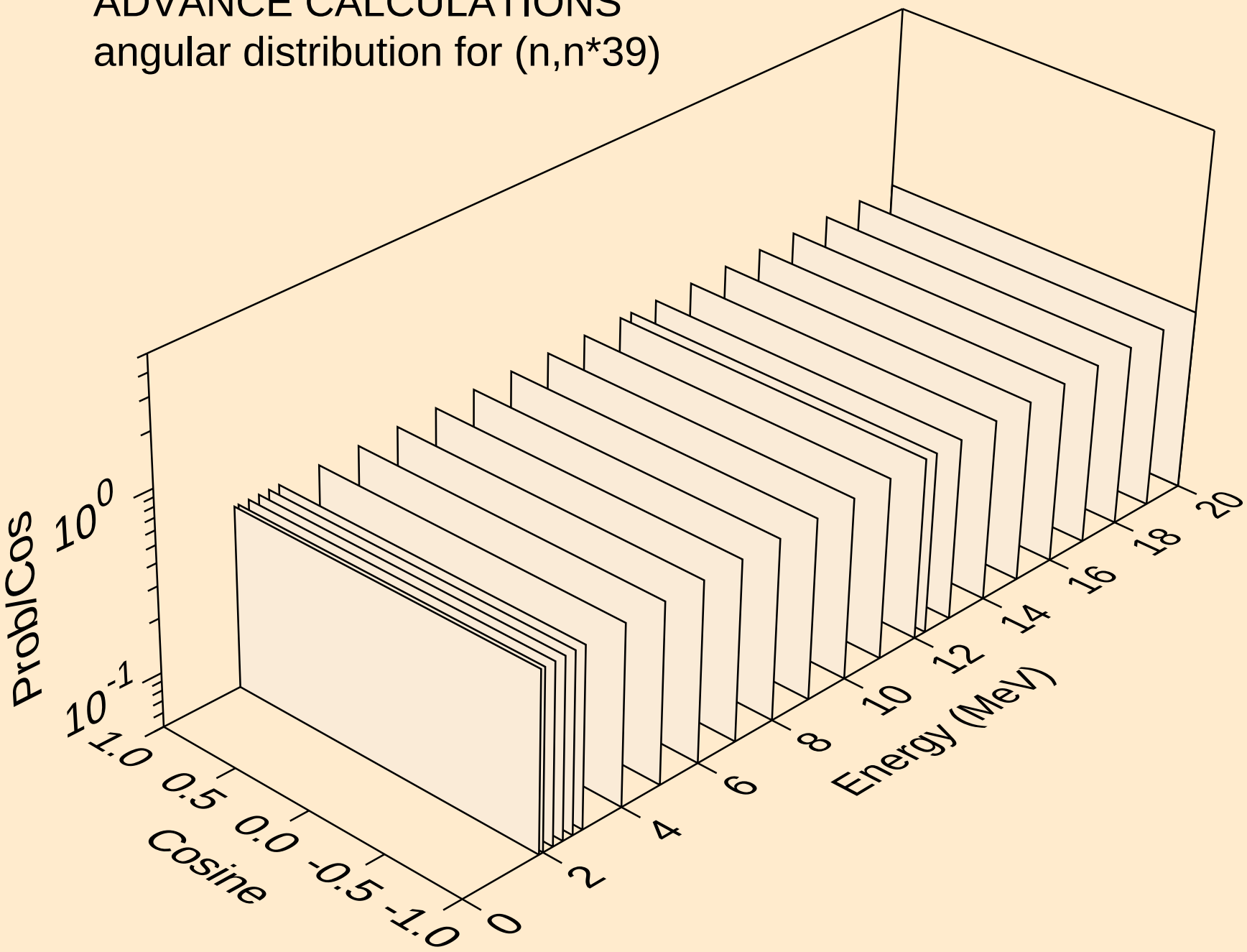
ADVANCE CALCULATIONS
angular distribution for (n,n*37)



ADVANCE CALCULATIONS
angular distribution for (n,n*38)

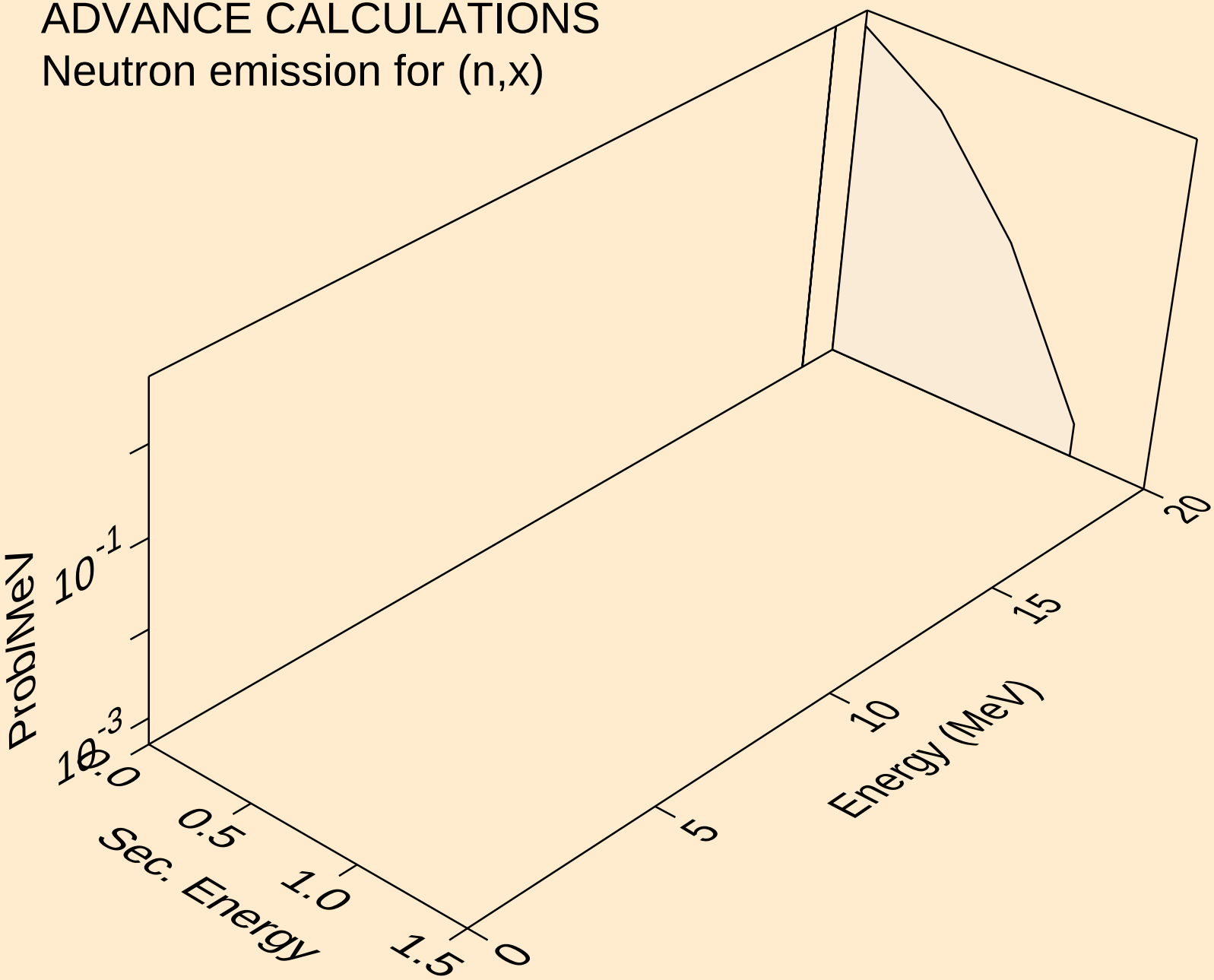


ADVANCE CALCULATIONS
angular distribution for (n,n*39)



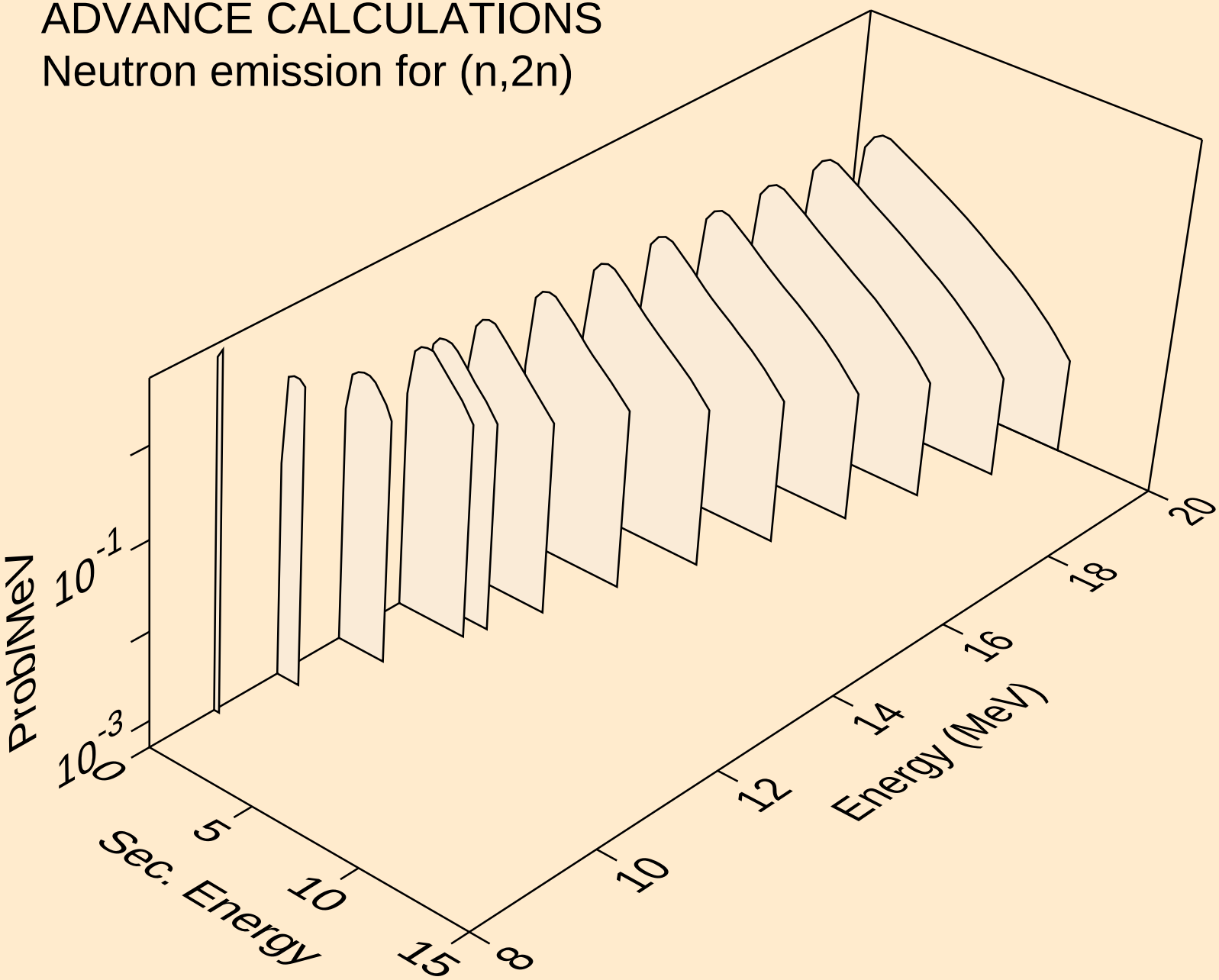
ADVANCE CALCULATIONS

Neutron emission for (n,x)



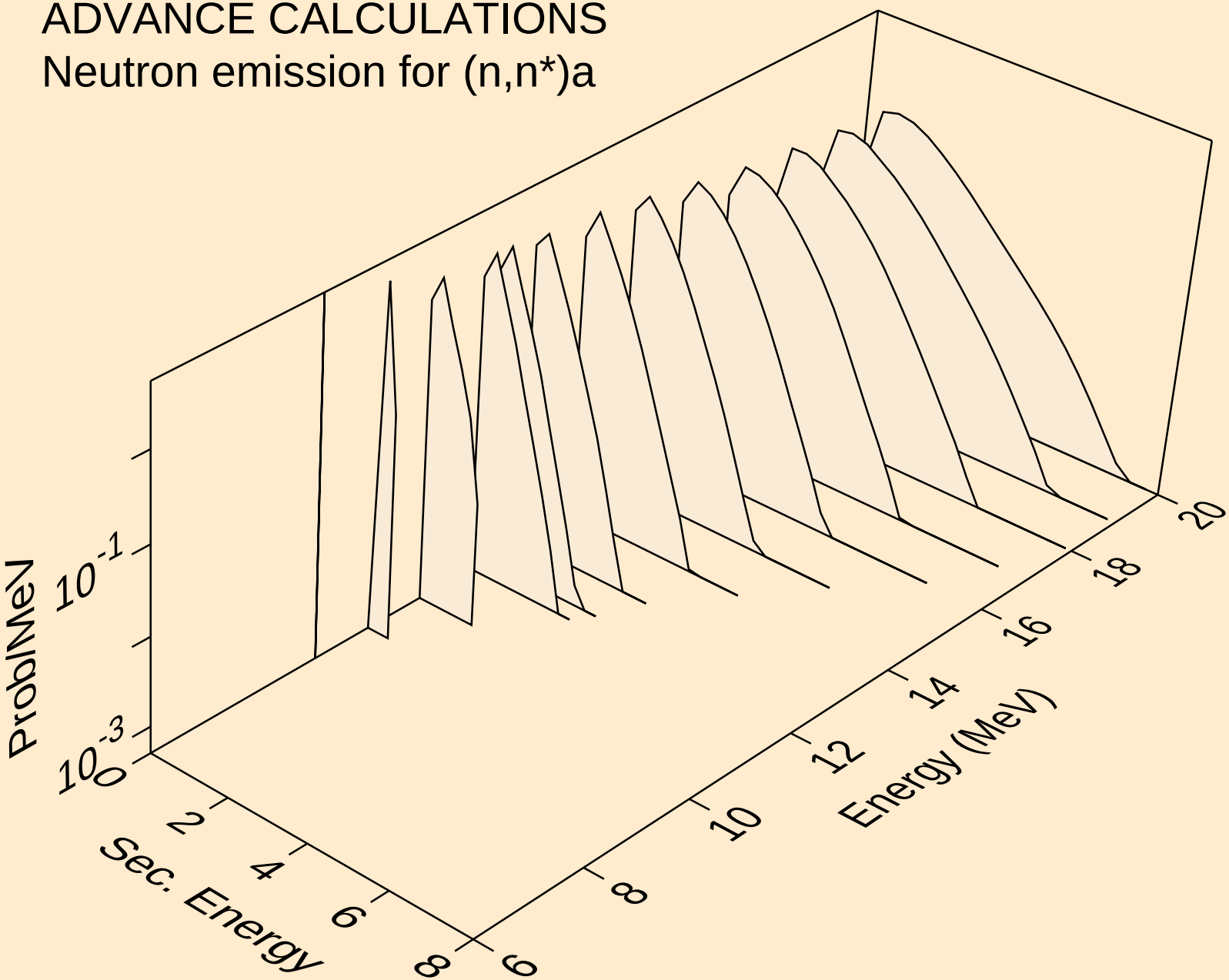
ADVANCE CALCULATIONS

Neutron emission for (n,2n)



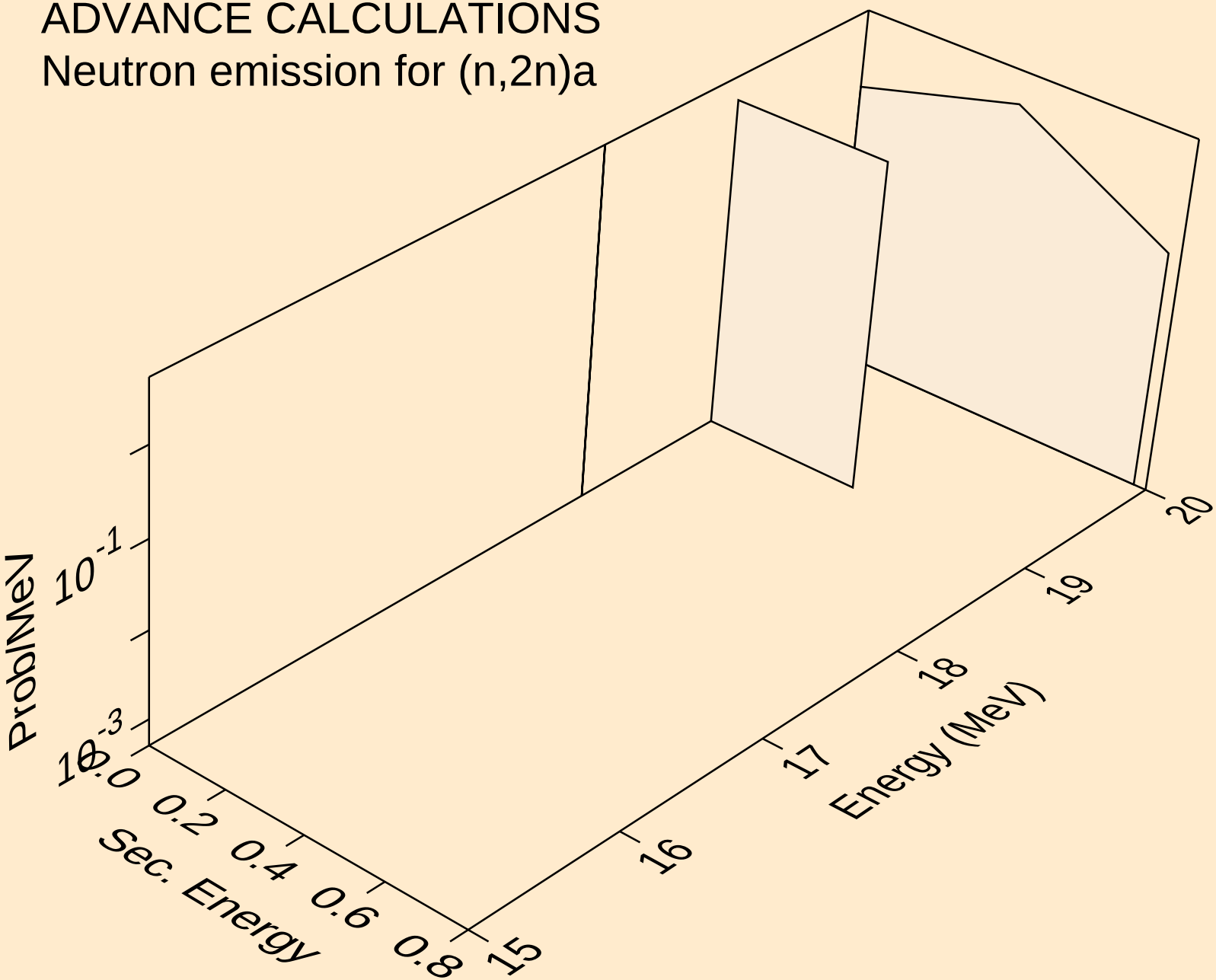
ADVANCE CALCULATIONS

Neutron emission for (n,n*)a



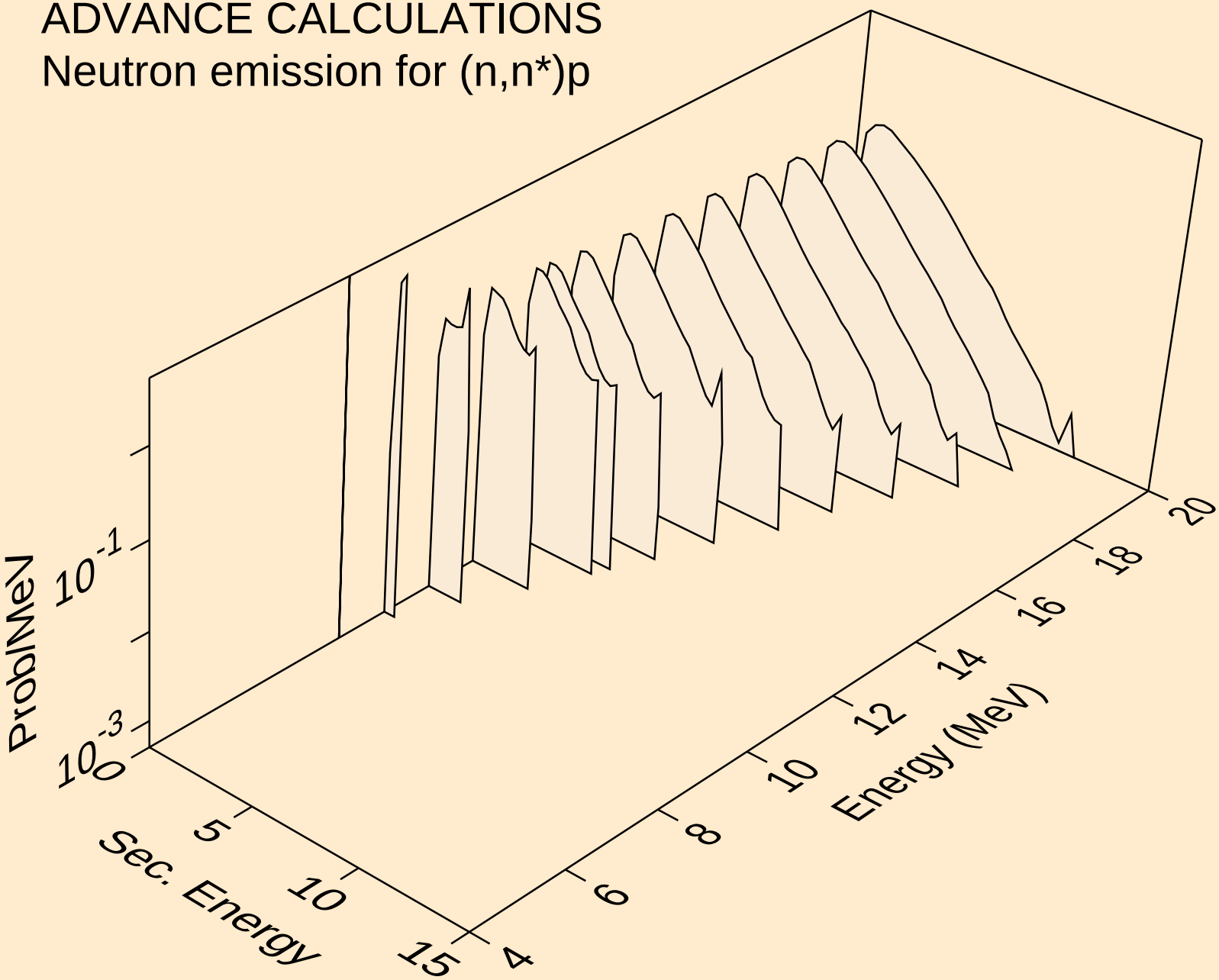
ADVANCE CALCULATIONS

Neutron emission for (n,2n)a



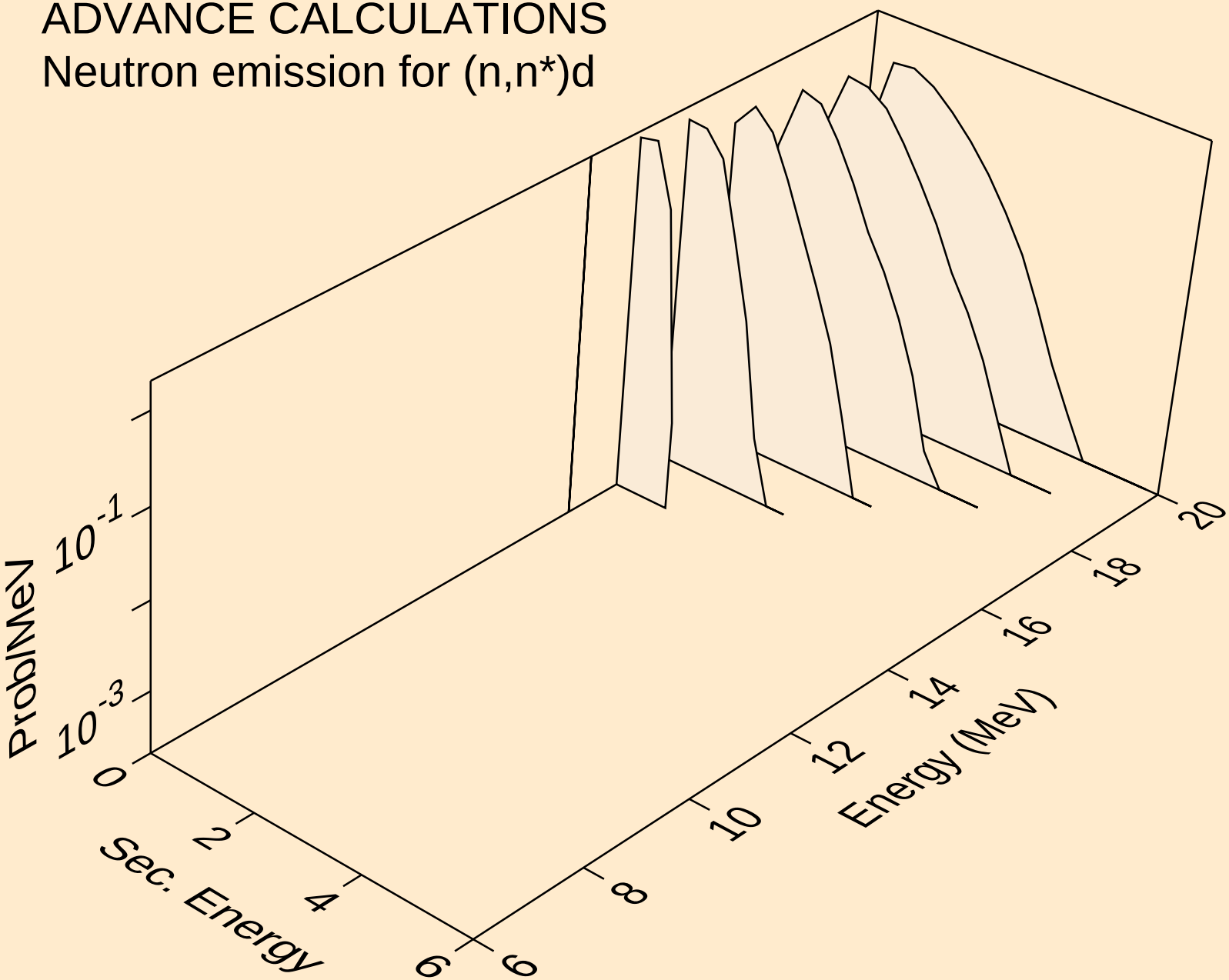
ADVANCE CALCULATIONS

Neutron emission for (n,n*)p



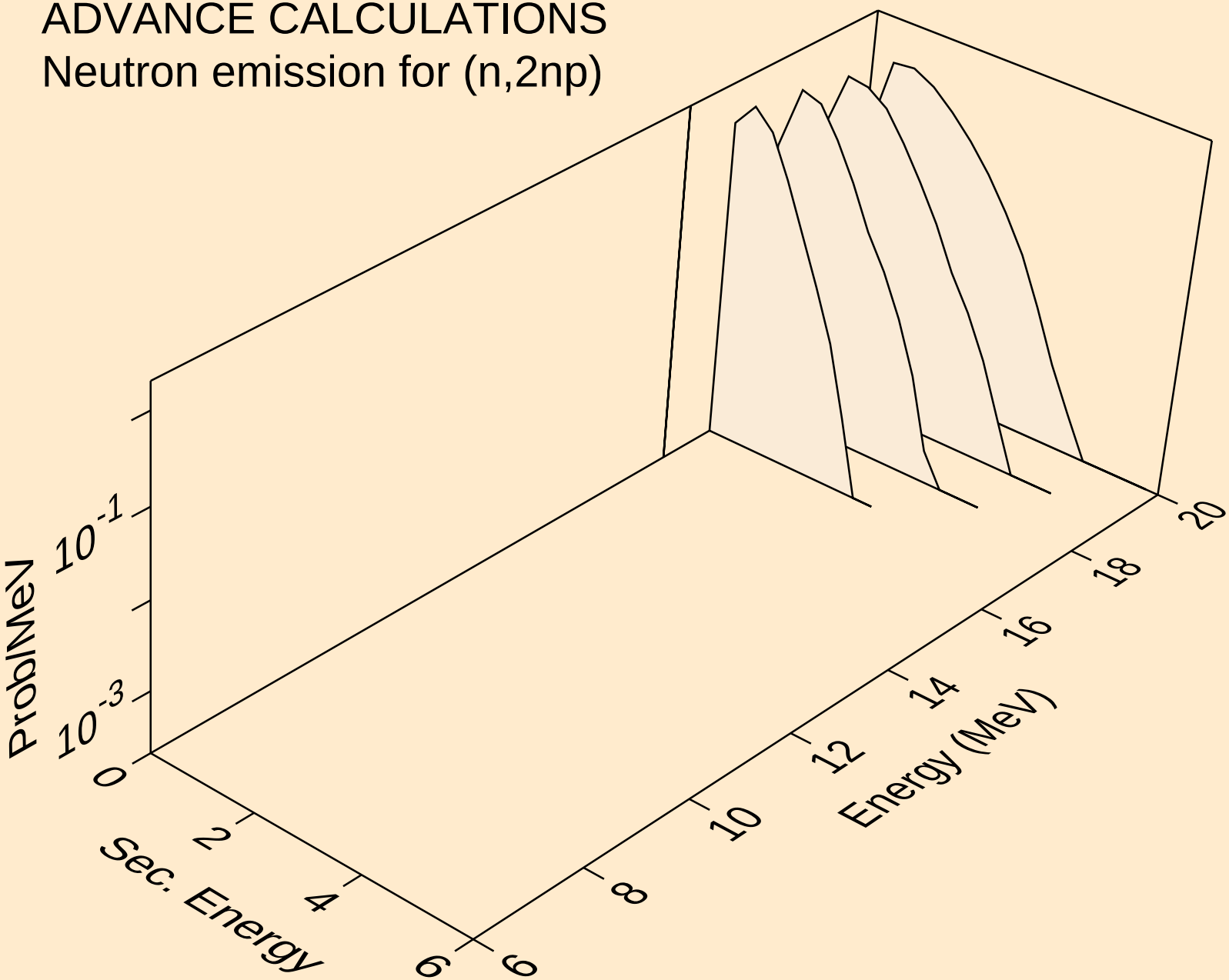
ADVANCE CALCULATIONS

Neutron emission for (n,n*)d



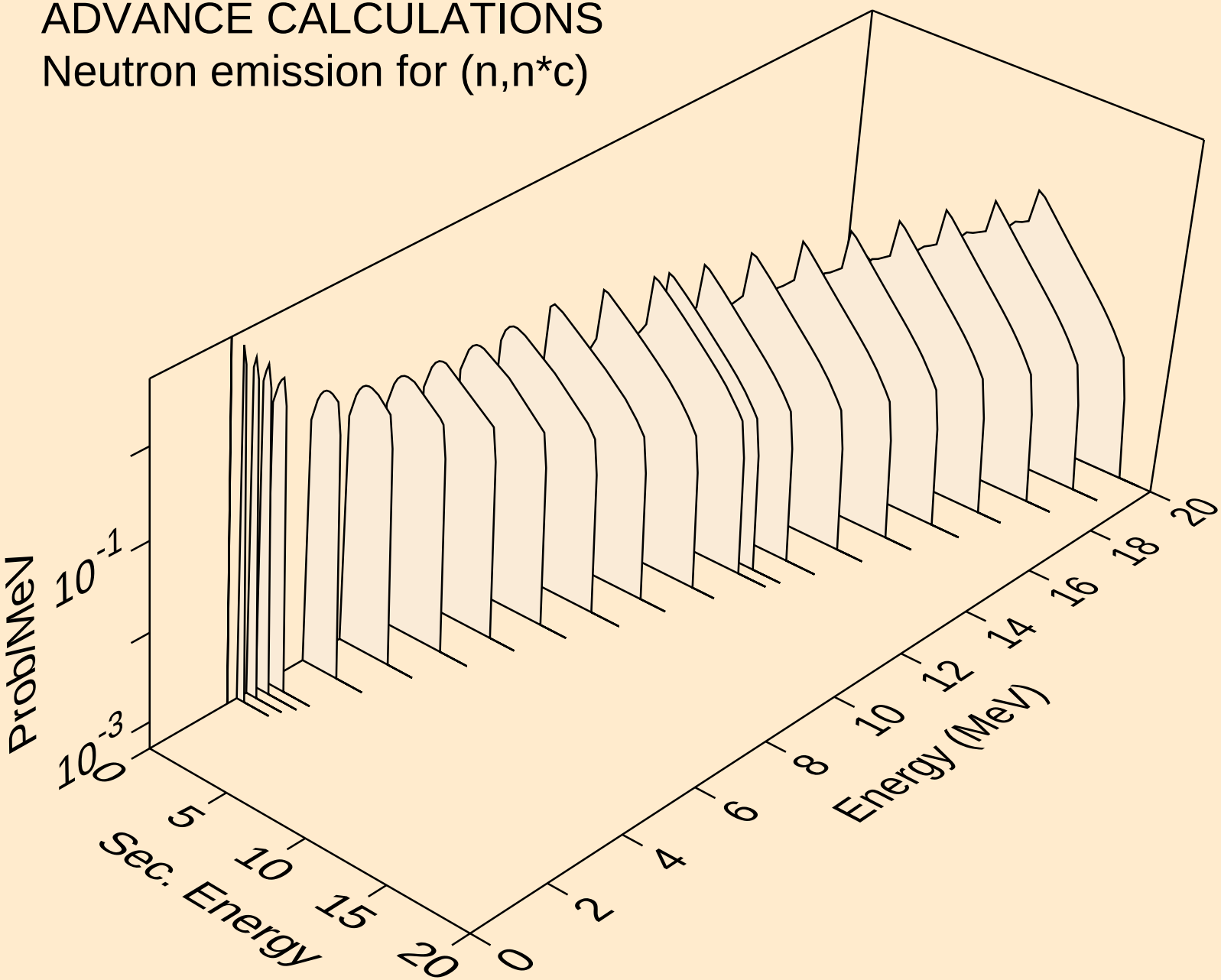
ADVANCE CALCULATIONS

Neutron emission for (n,2np)



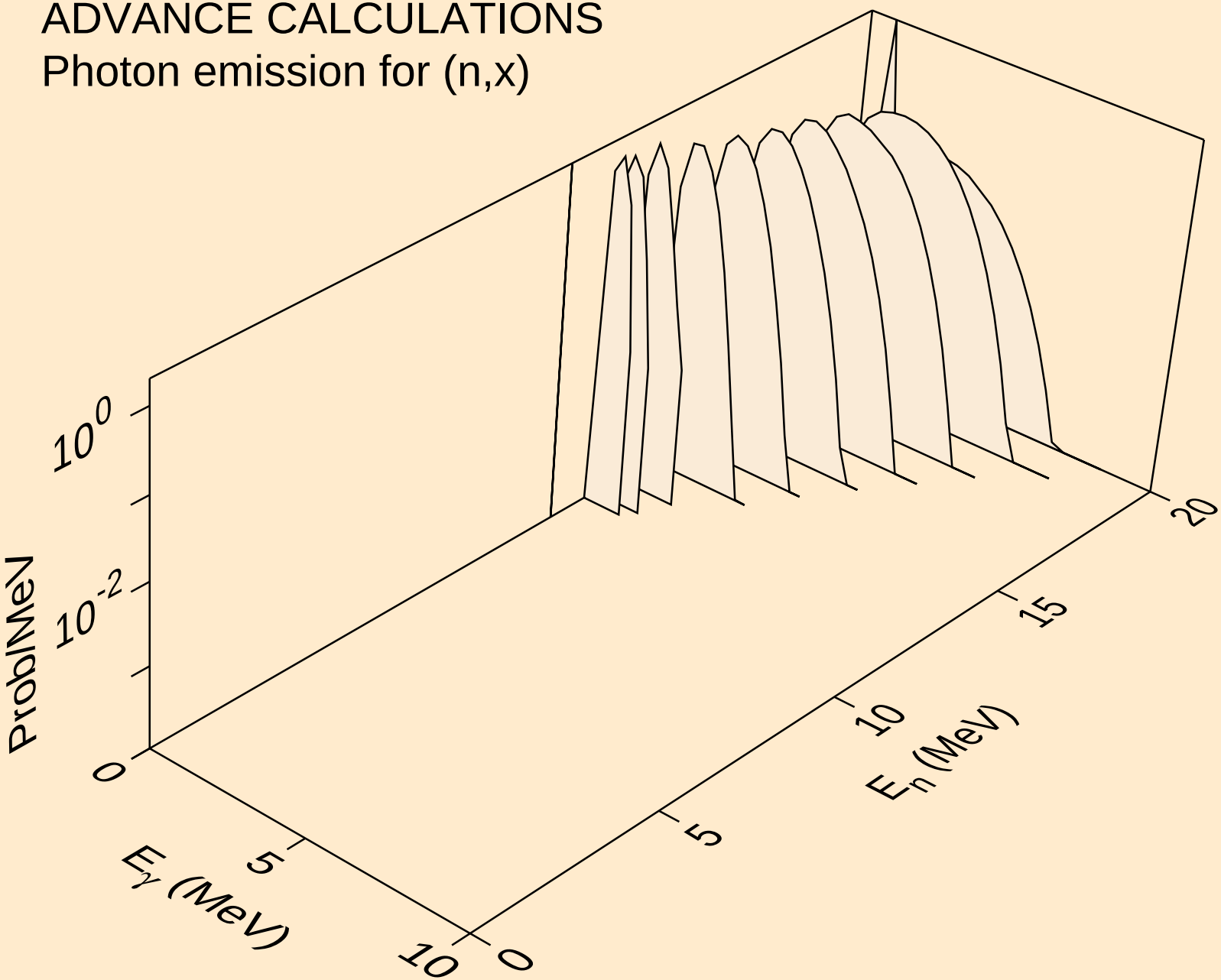
ADVANCE CALCULATIONS

Neutron emission for (n,n*c)



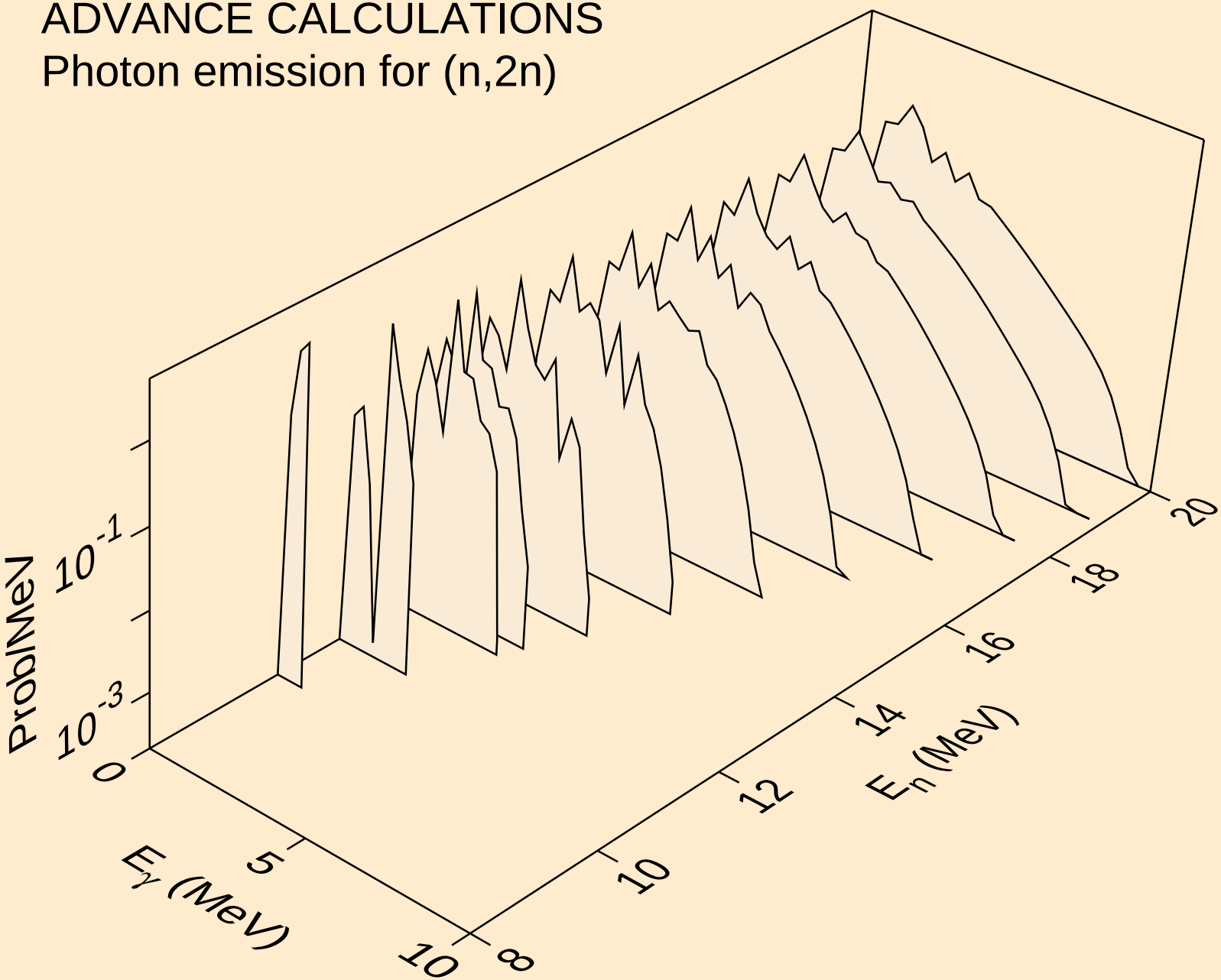
ADVANCE CALCULATIONS

Photon emission for (n,x)



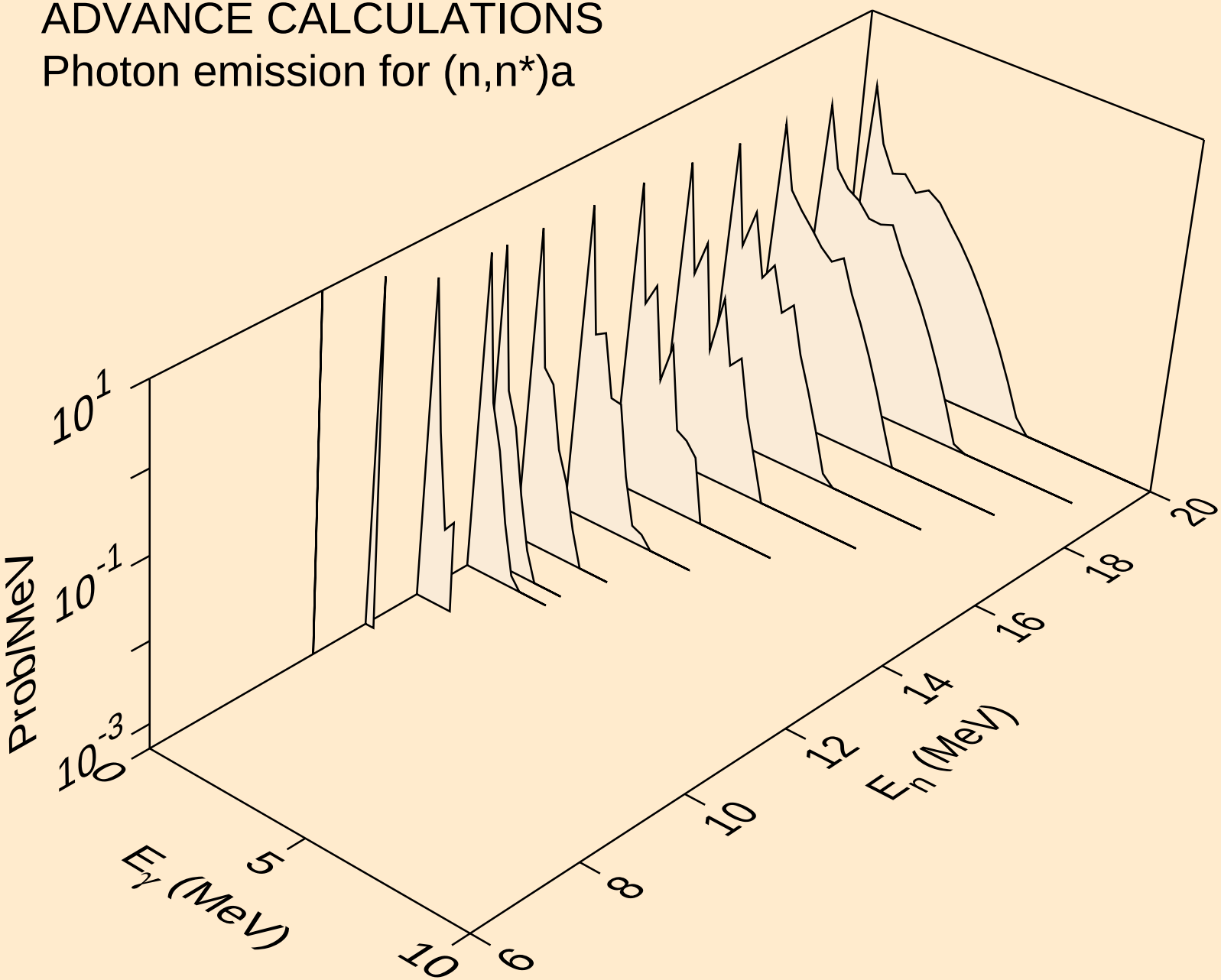
ADVANCE CALCULATIONS

Photon emission for (n,2n)



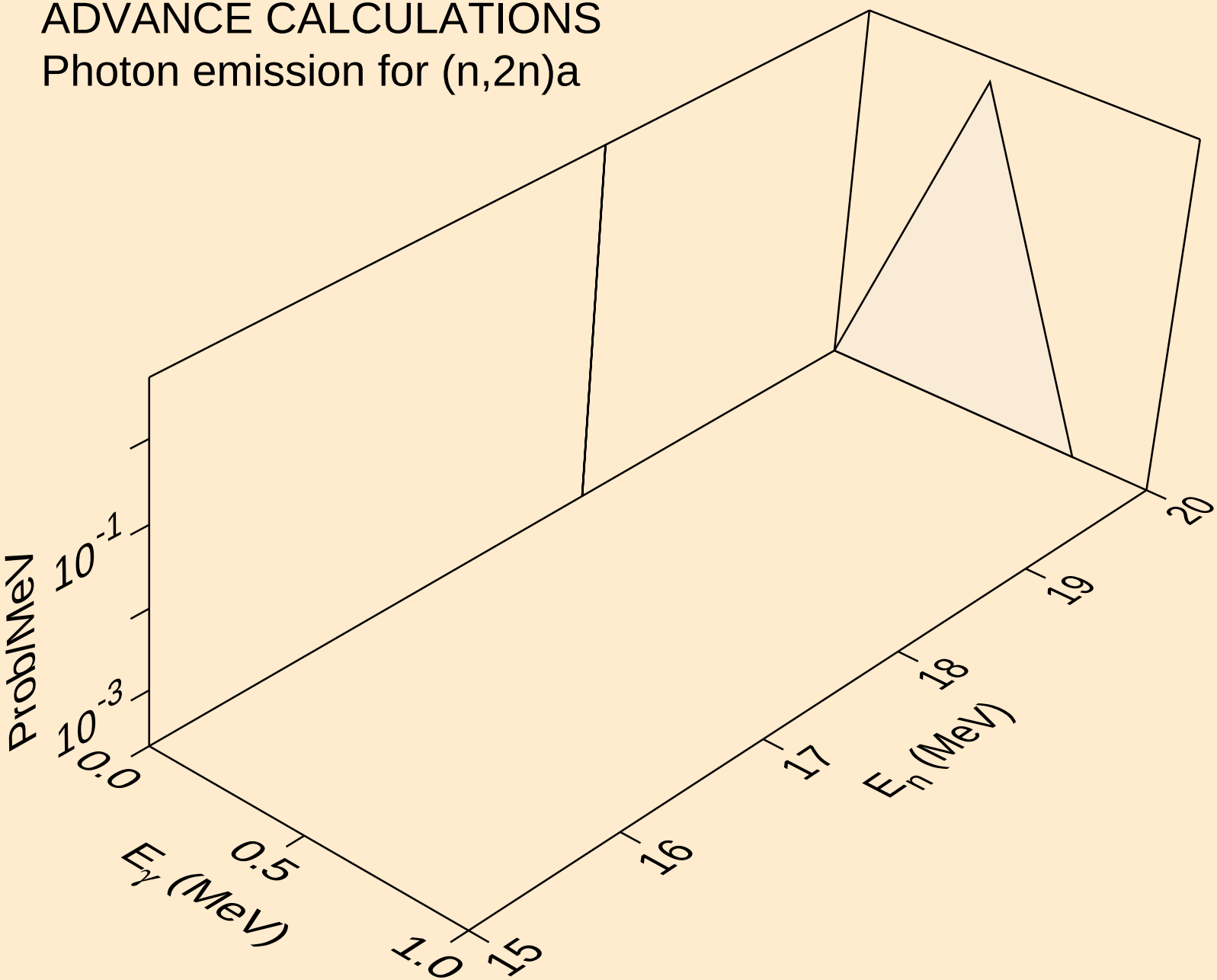
ADVANCE CALCULATIONS

Photon emission for (n,n*)a



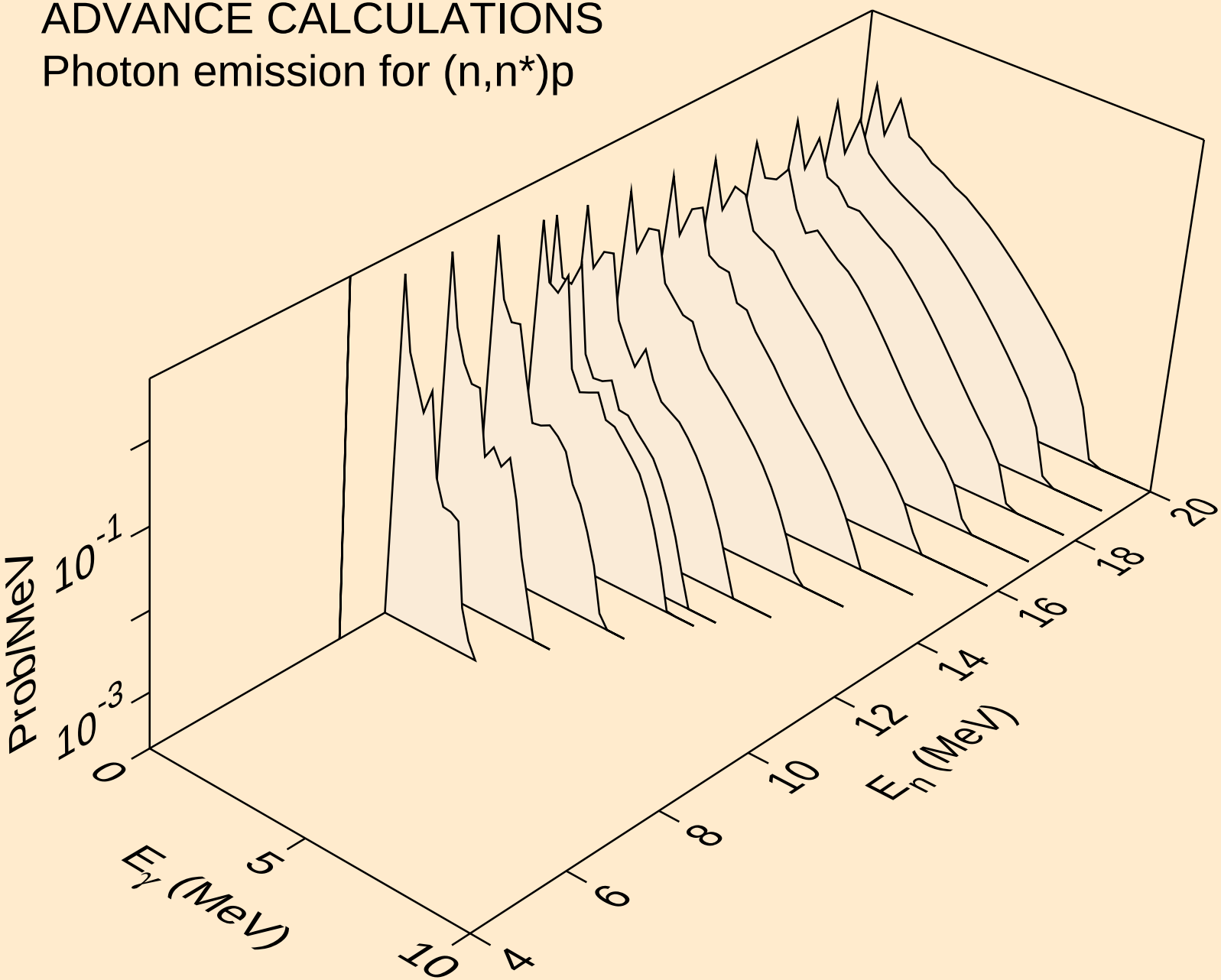
ADVANCE CALCULATIONS

Photon emission for (n,2n)a



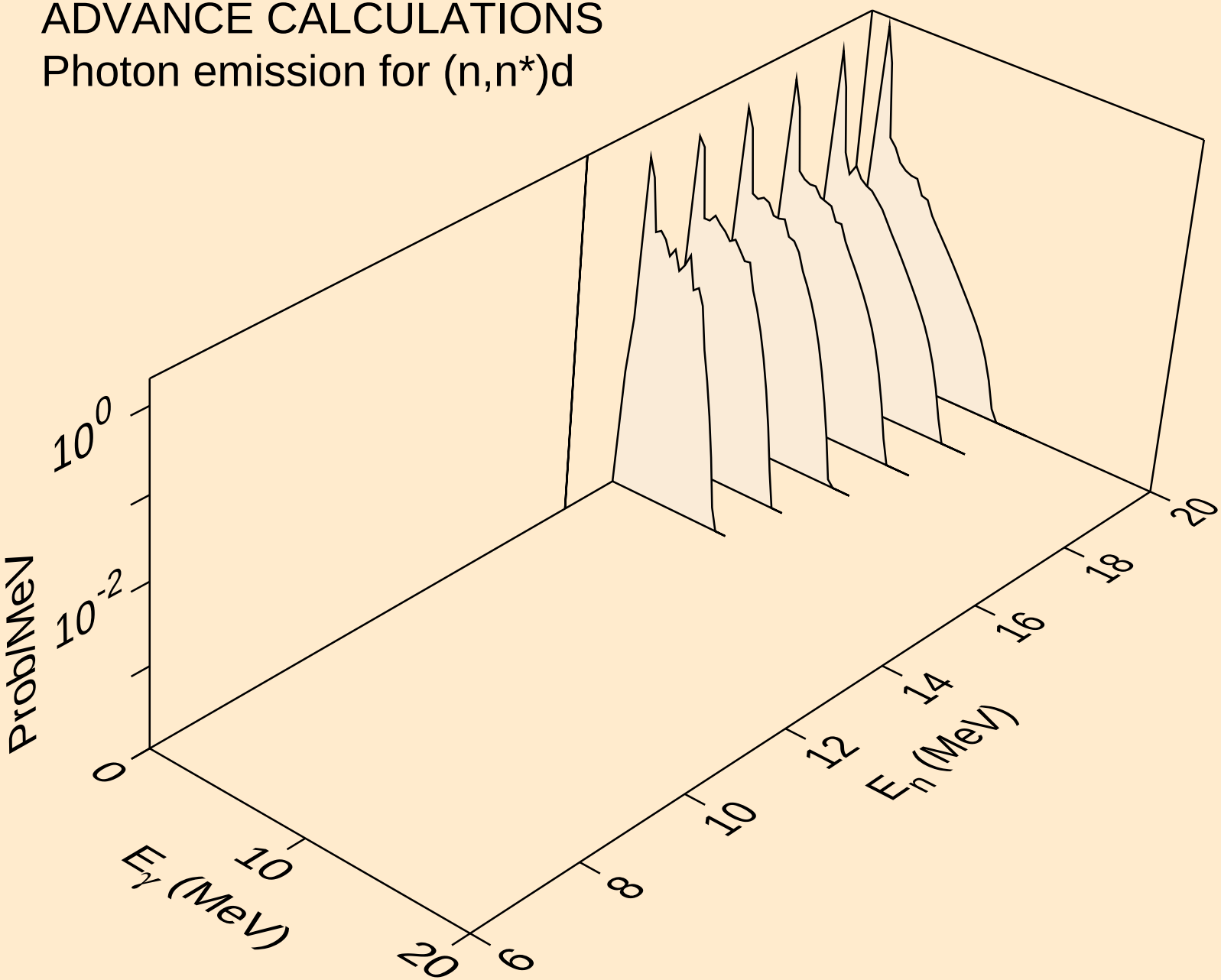
ADVANCE CALCULATIONS

Photon emission for (n,n*)p



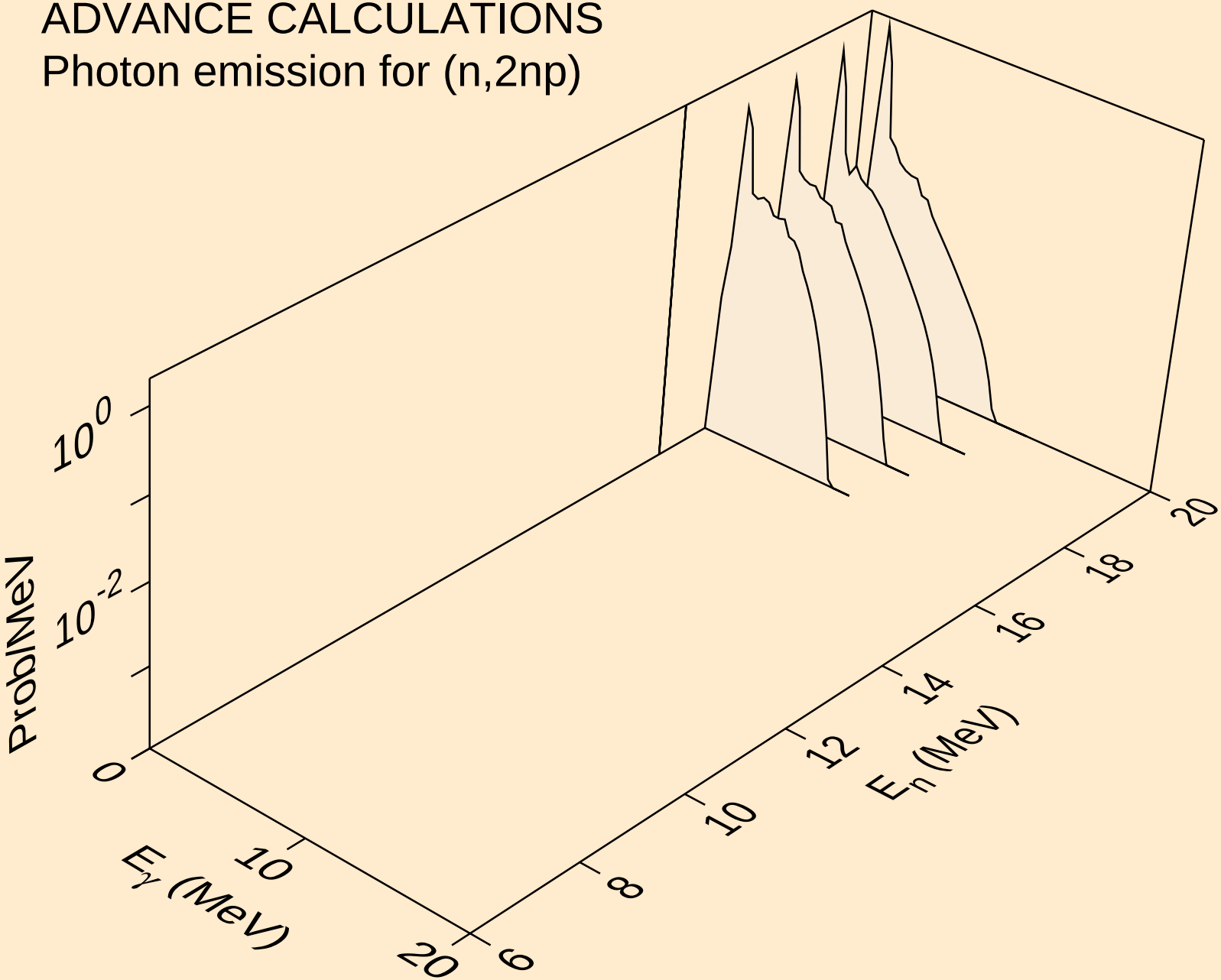
ADVANCE CALCULATIONS

Photon emission for (n,n*)d



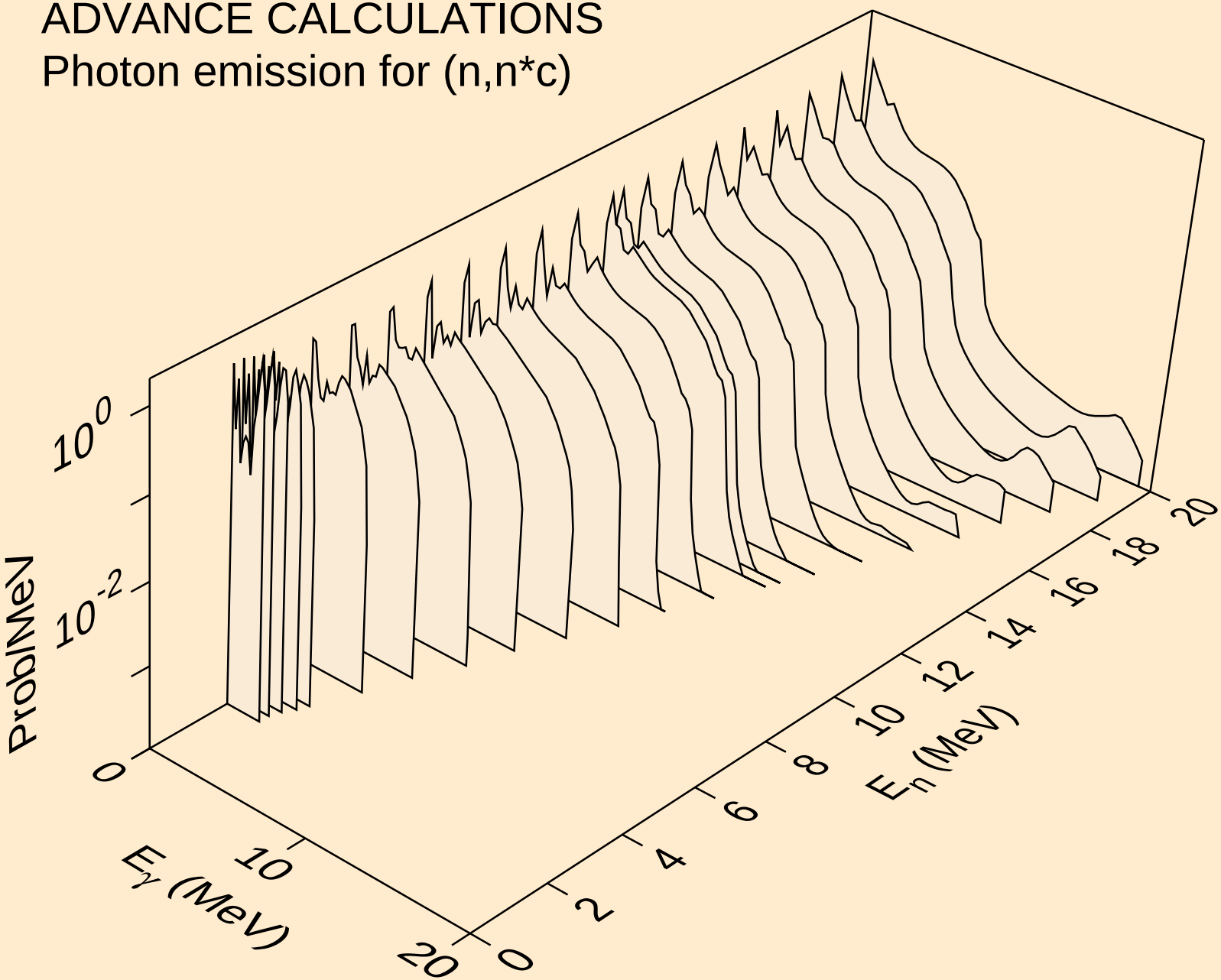
ADVANCE CALCULATIONS

Photon emission for (n,2np)



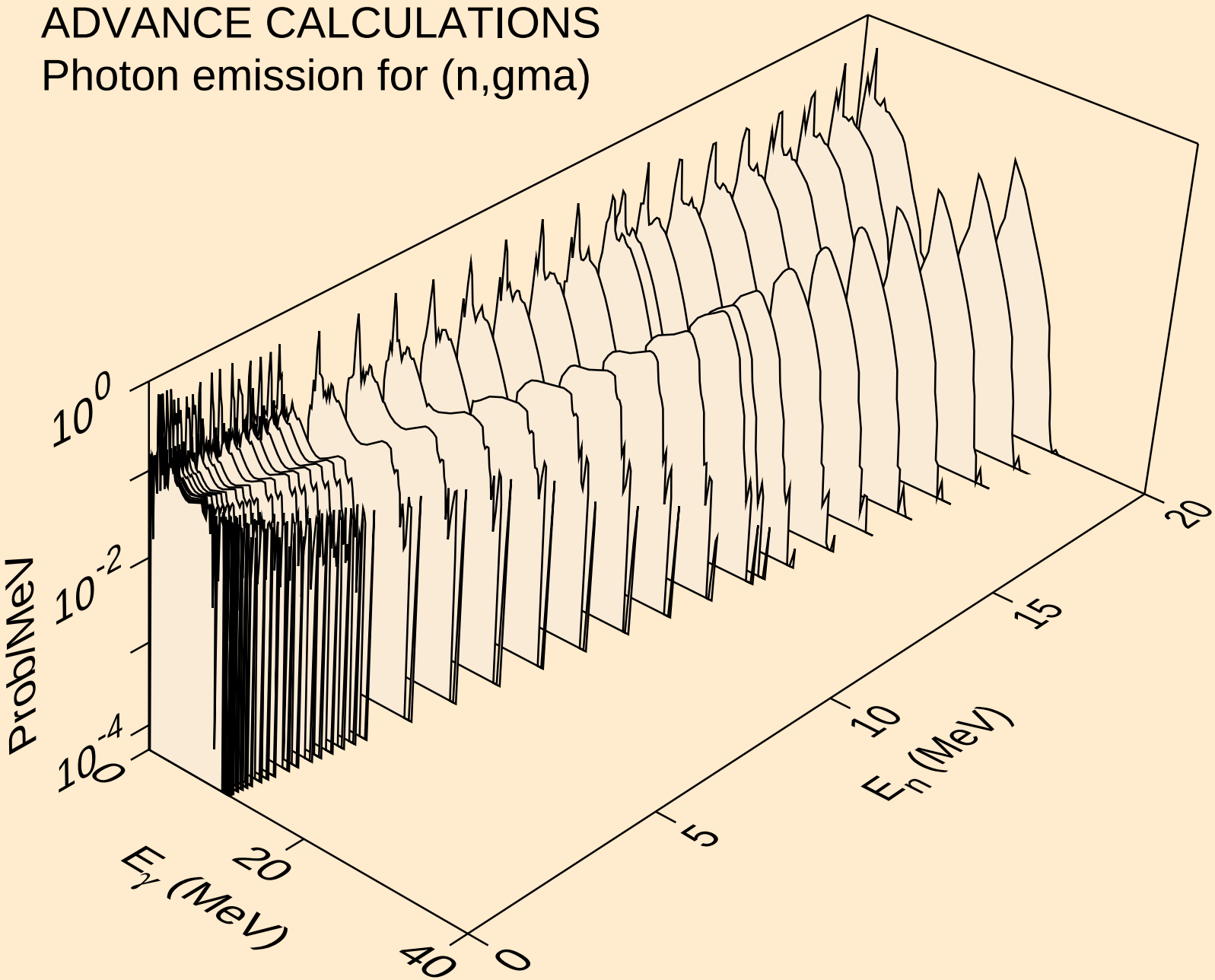
ADVANCE CALCULATIONS

Photon emission for (n,n*c)



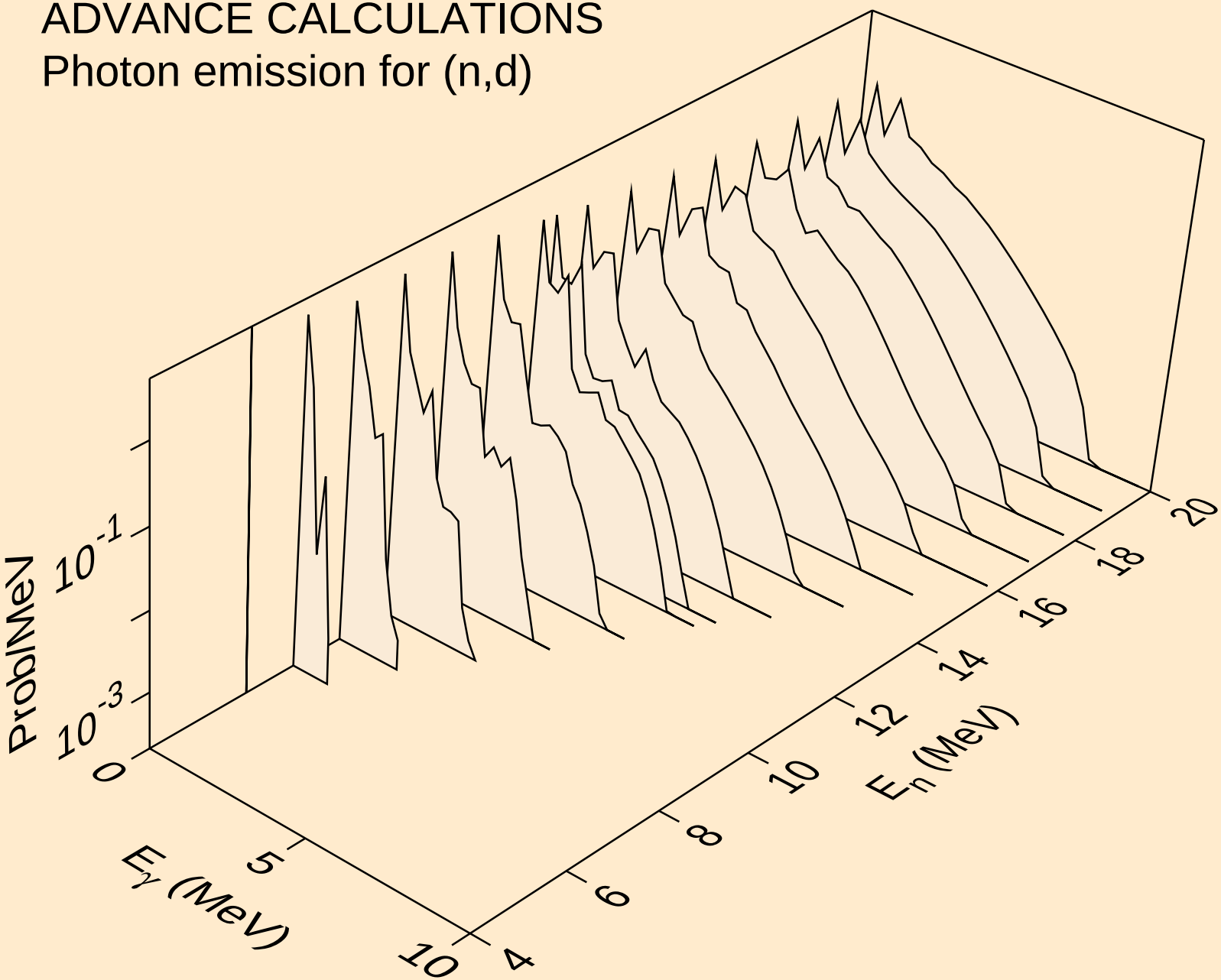
ADVANCE CALCULATIONS

Photon emission for (n,gma)



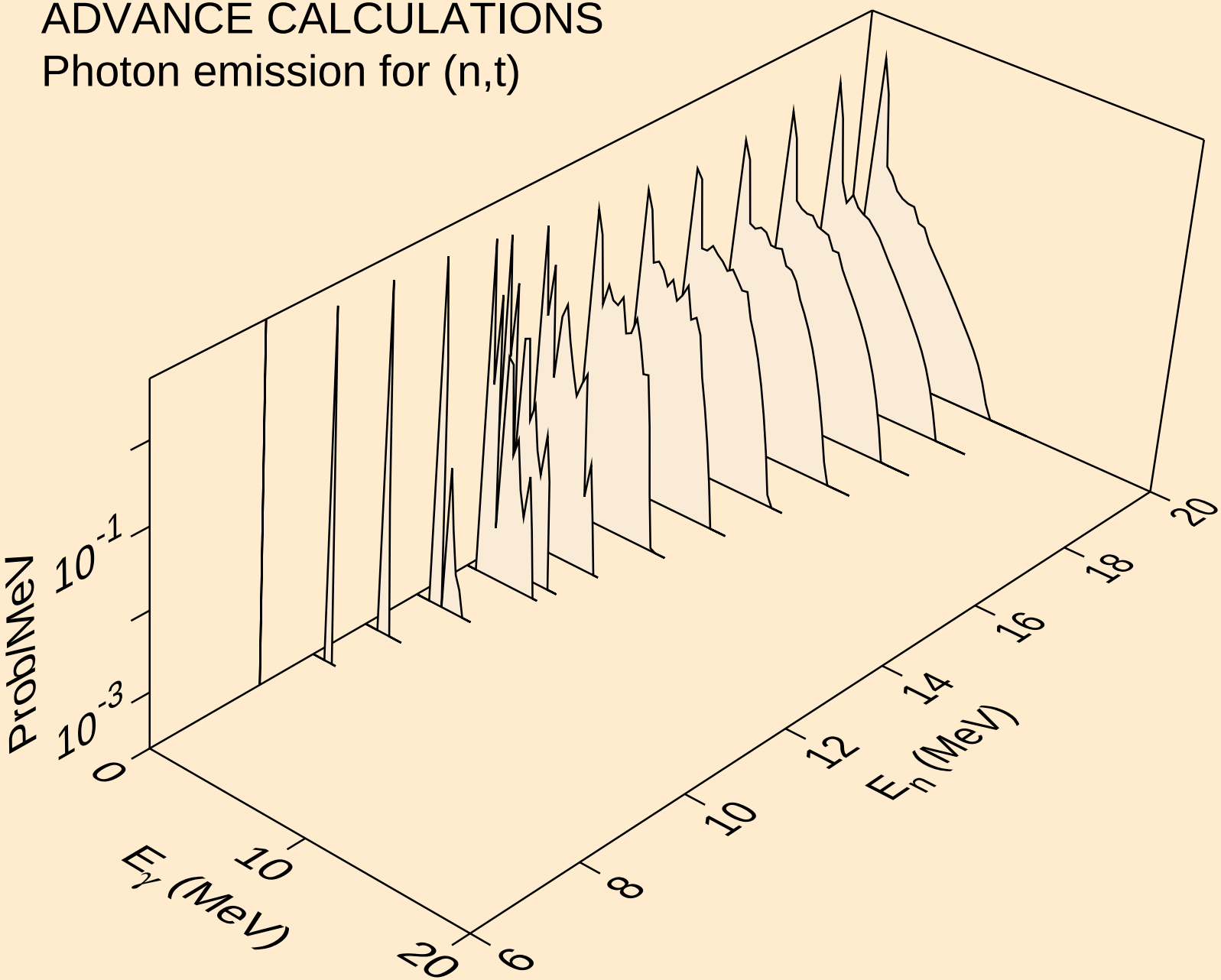
ADVANCE CALCULATIONS

Photon emission for (n,d)



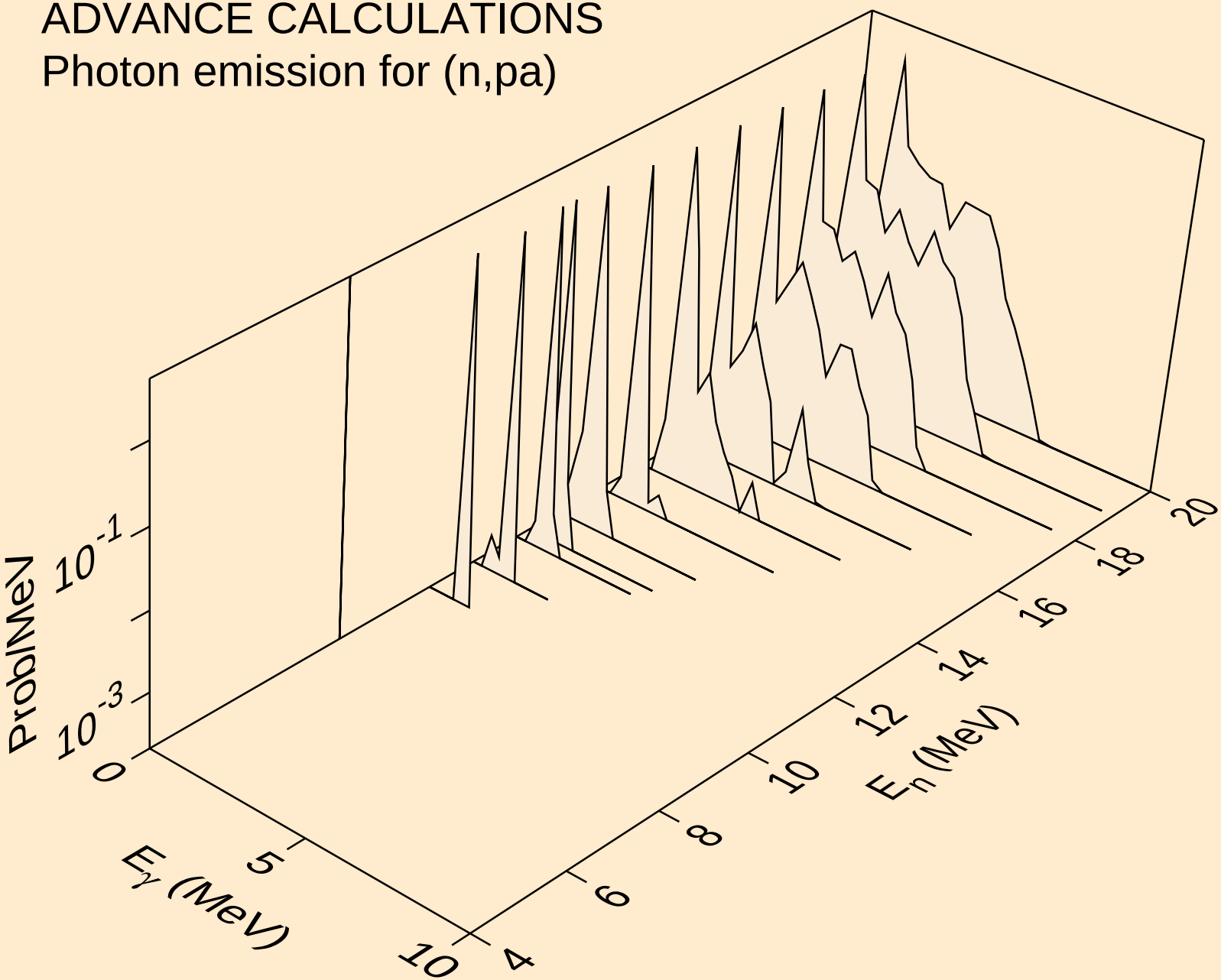
ADVANCE CALCULATIONS

Photon emission for (n,t)



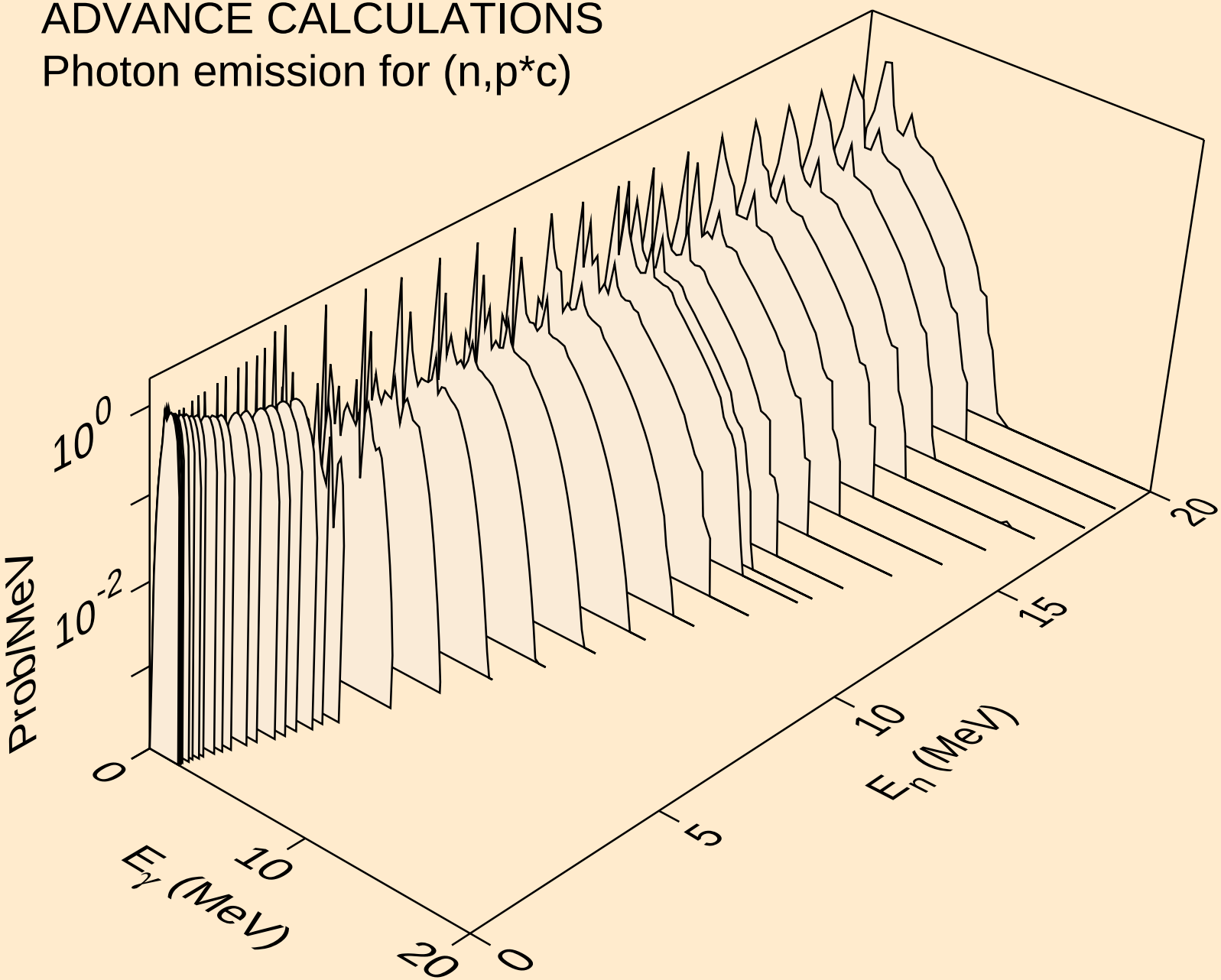
ADVANCE CALCULATIONS

Photon emission for (n,pa)



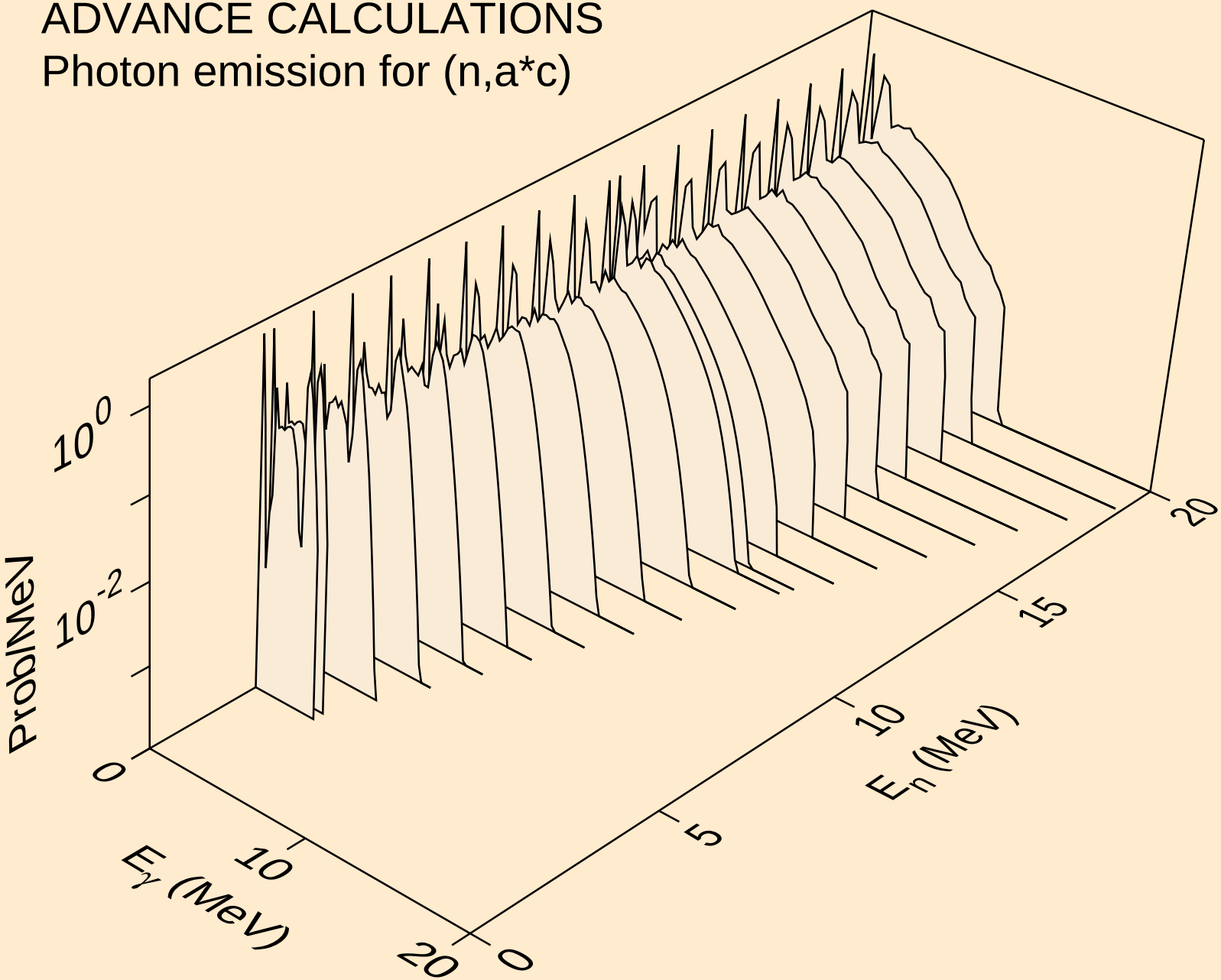
ADVANCE CALCULATIONS

Photon emission for (n,p*c)

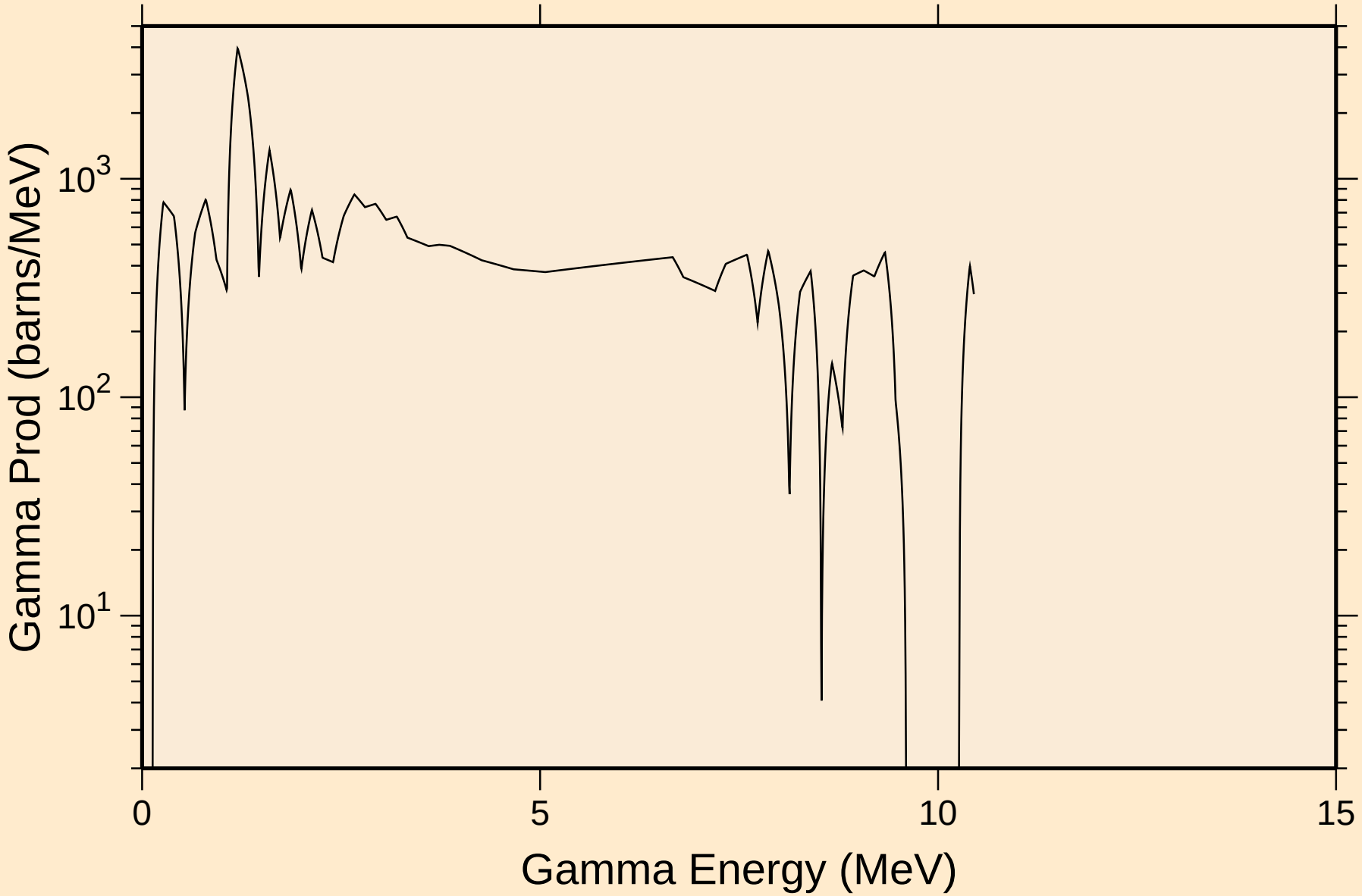


ADVANCE CALCULATIONS

Photon emission for (n,a*c)

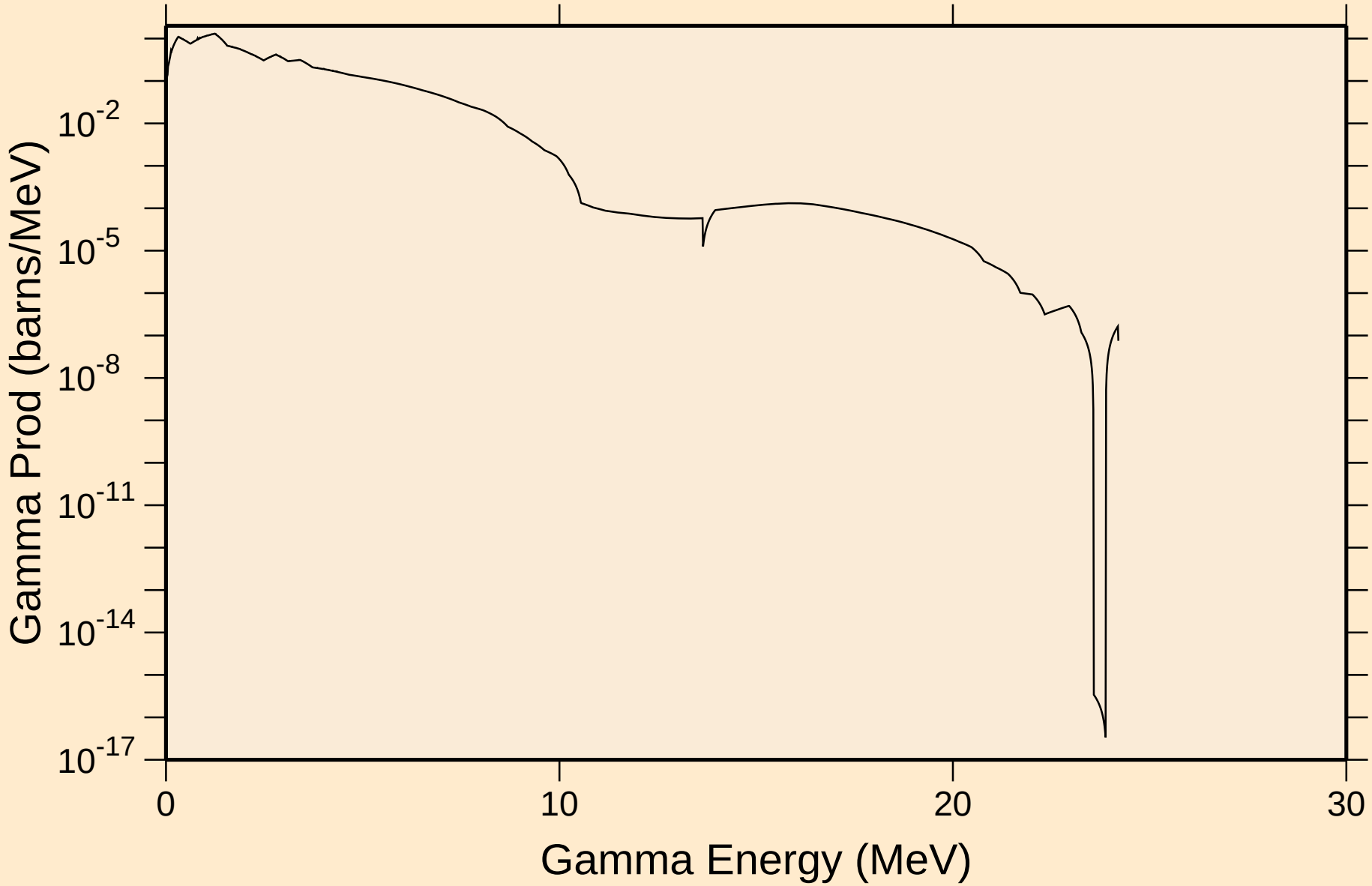


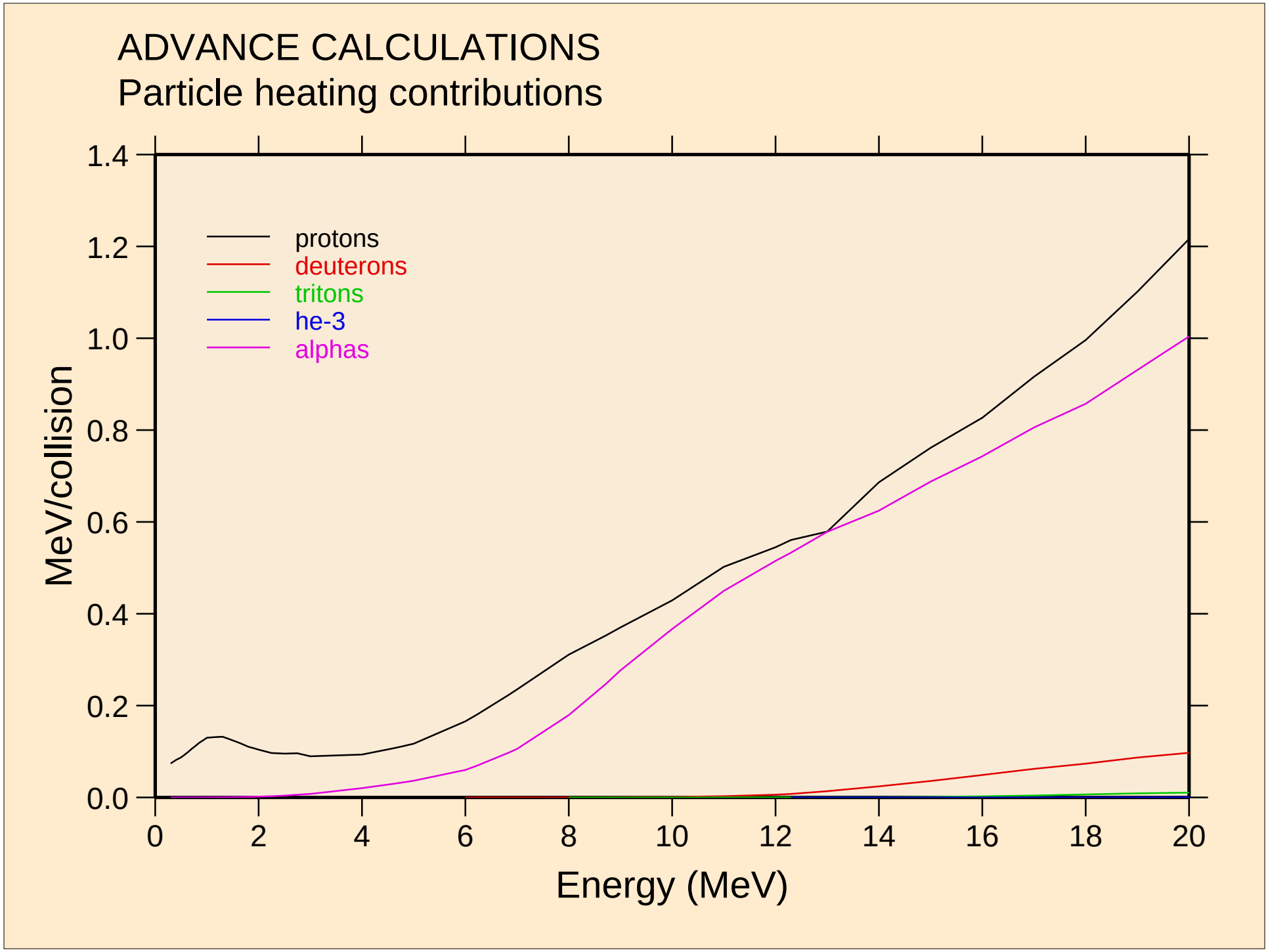
ADVANCE CALCULATIONS
thermal capture photon spectrum



ADVANCE CALCULATIONS

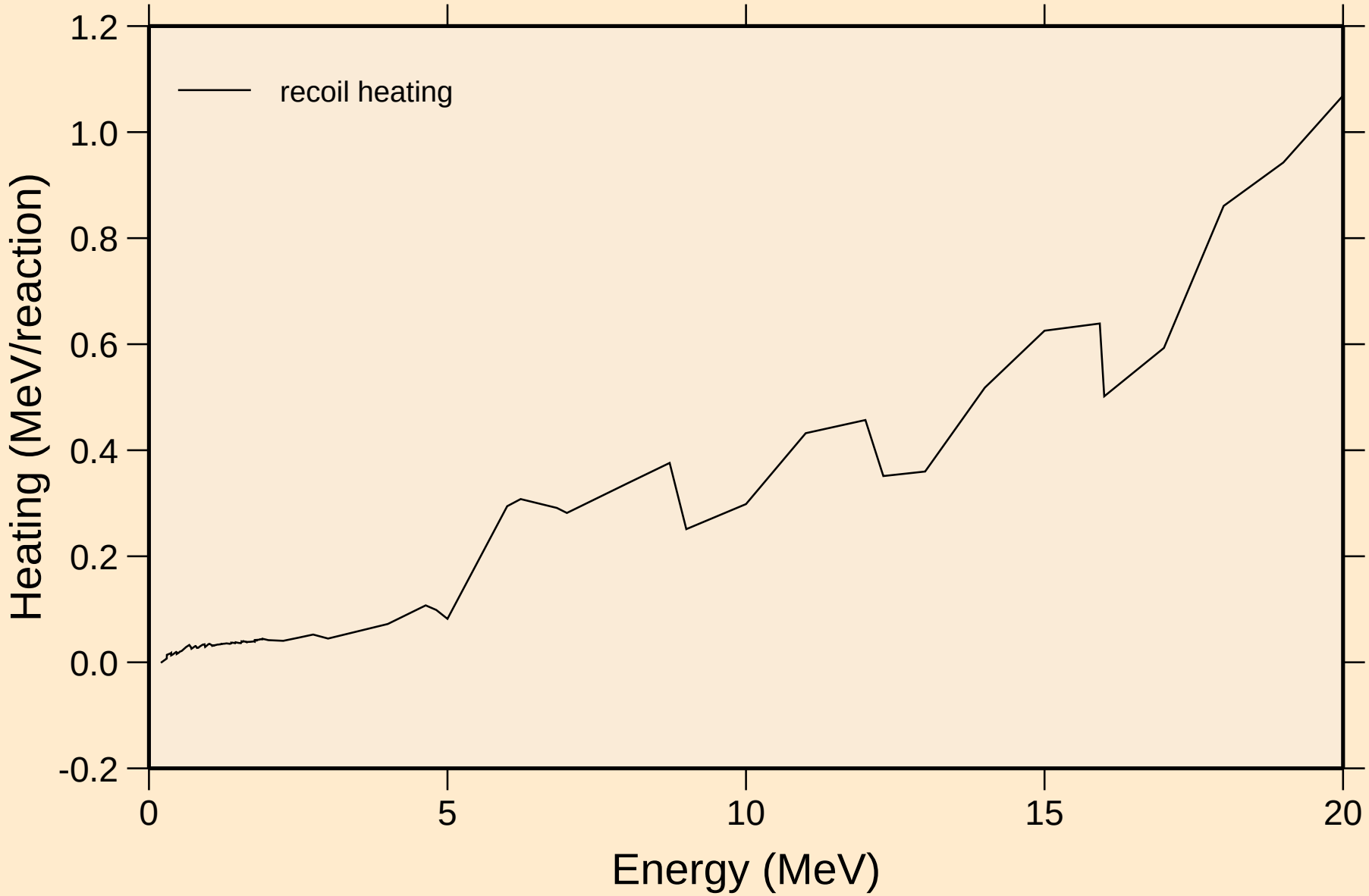
14 MeV photon spectrum

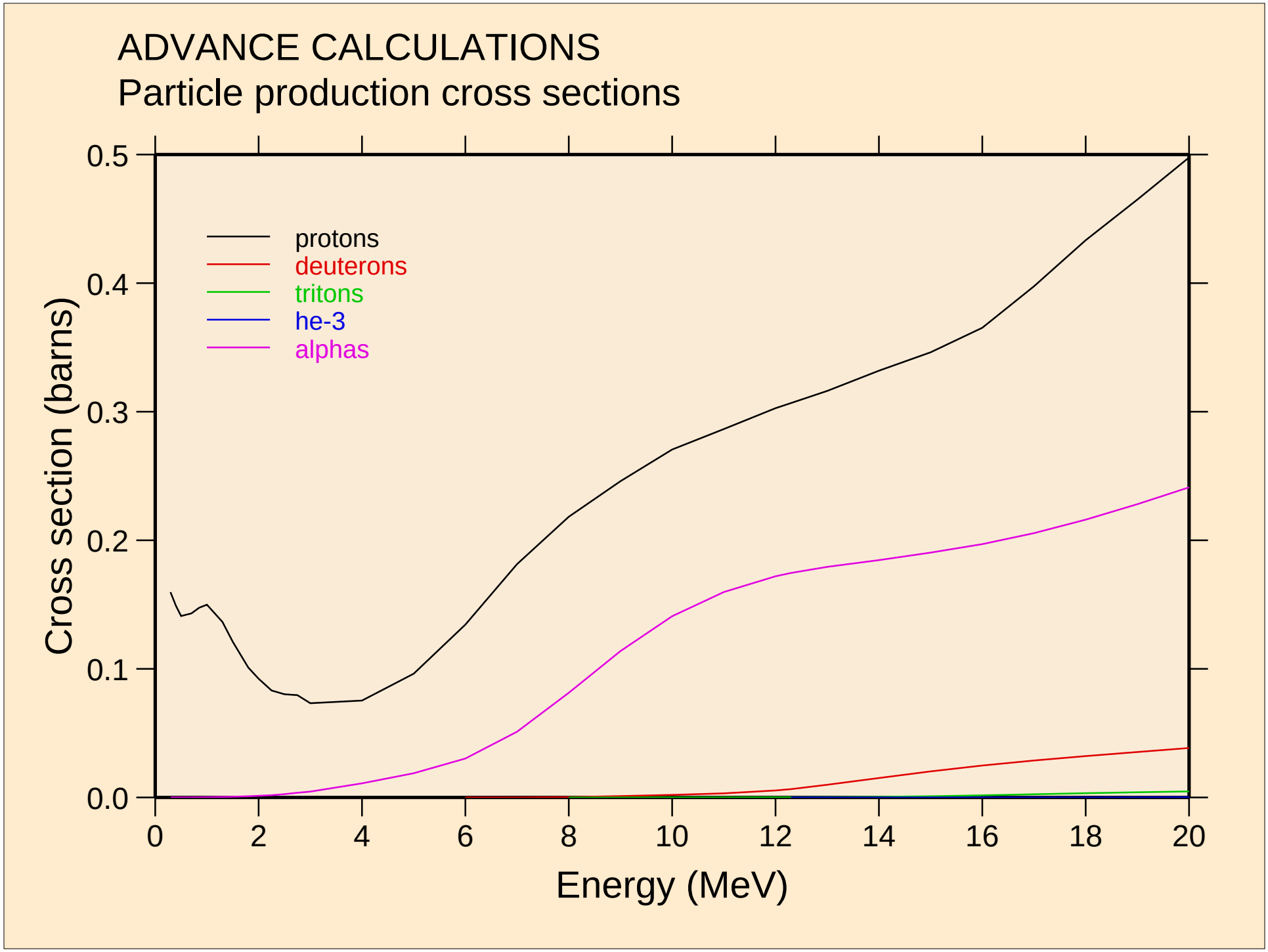



ADVANCE CALCULATIONS
Particle heating contributions
protons
deuterons
tritons
he-3
alphas
MeV/collision
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0
2
4
6
8
10
12
14
16
18
20

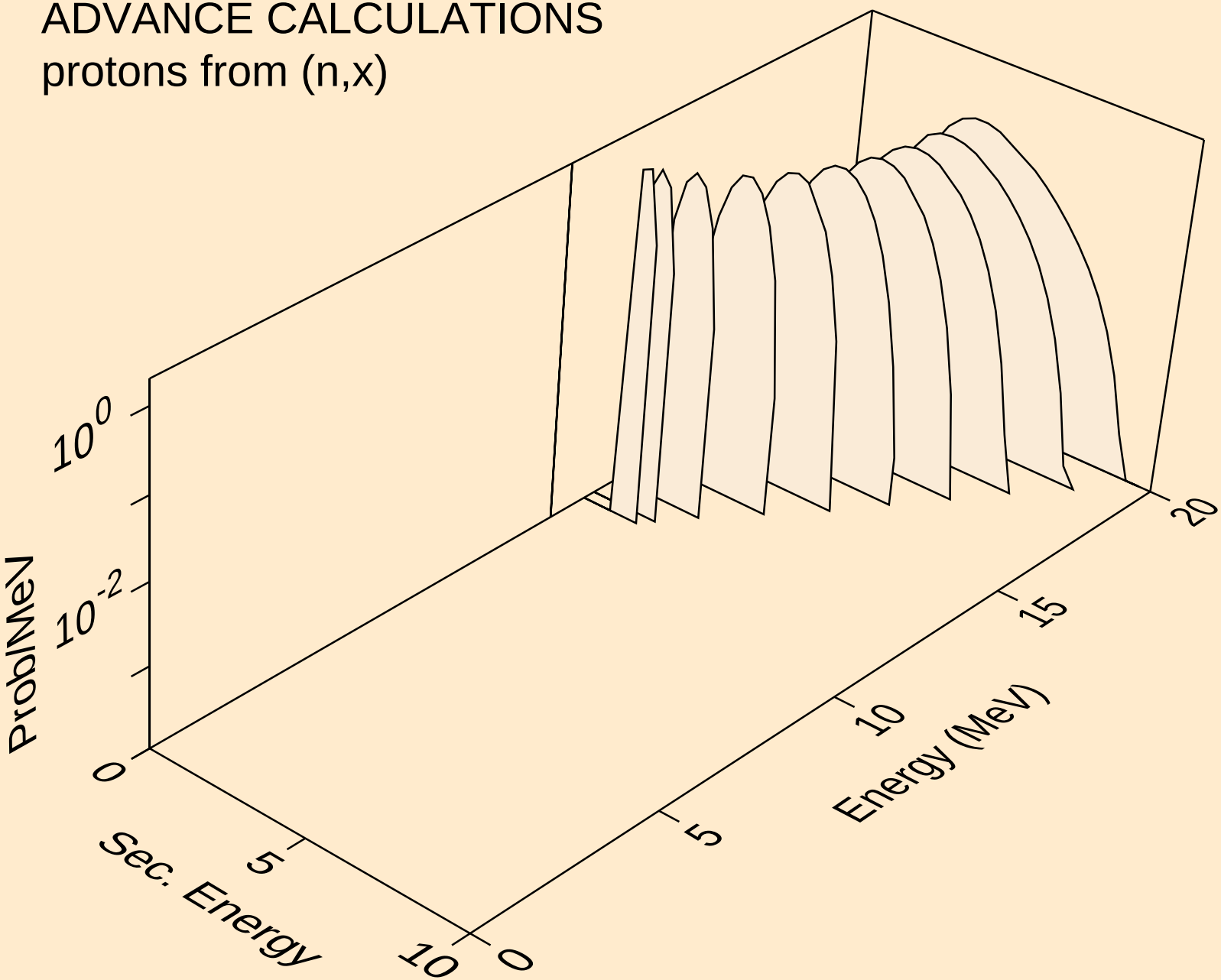
ADVANCE CALCULATIONS

Recoil Heating

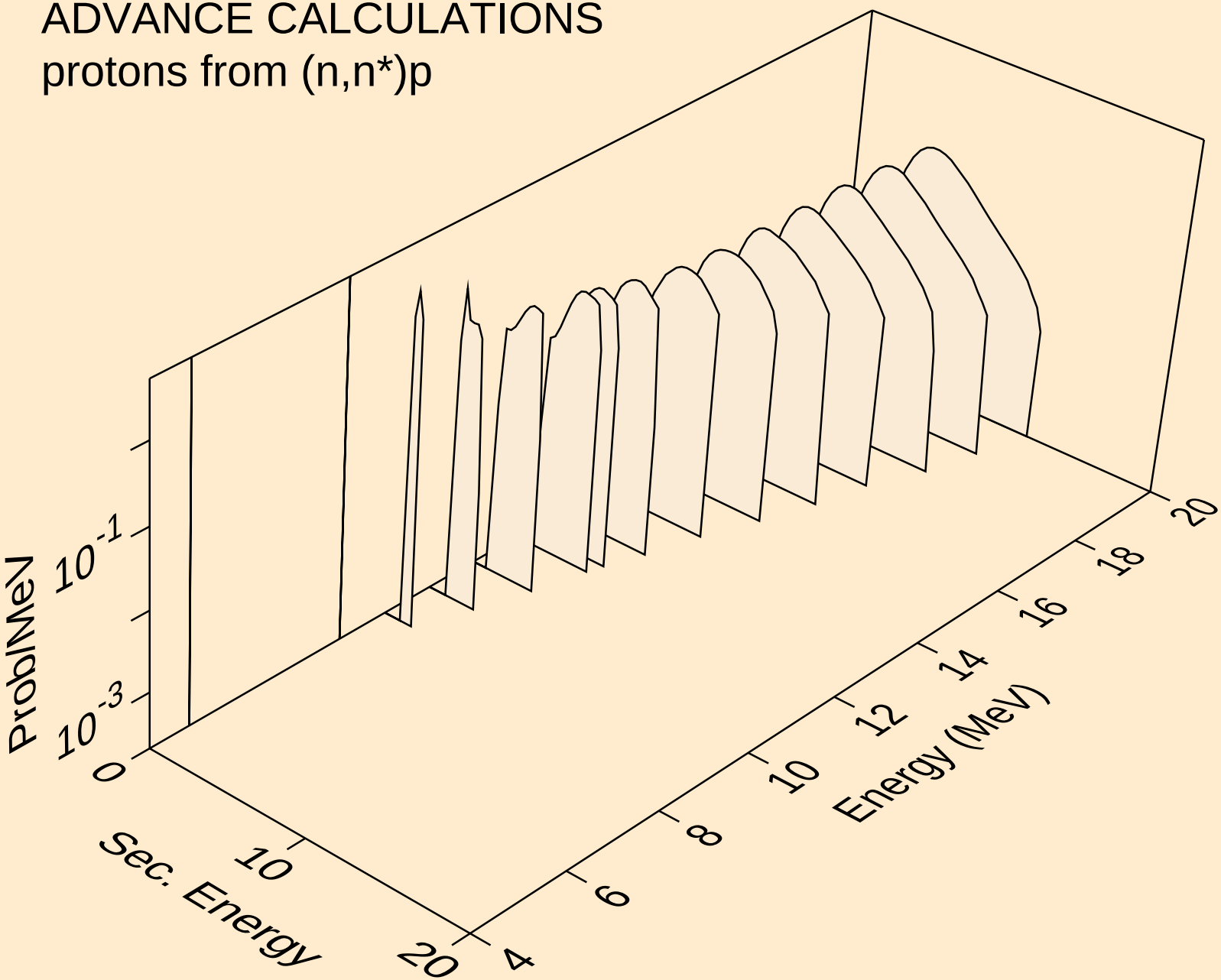



ADVANCE CALCULATIONS
Particle production cross sections
protons
deuterons
tritons
he-3
alphas
Cross section (barns)
0.0
0.1
0.2
0.3
0.4
0.5
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

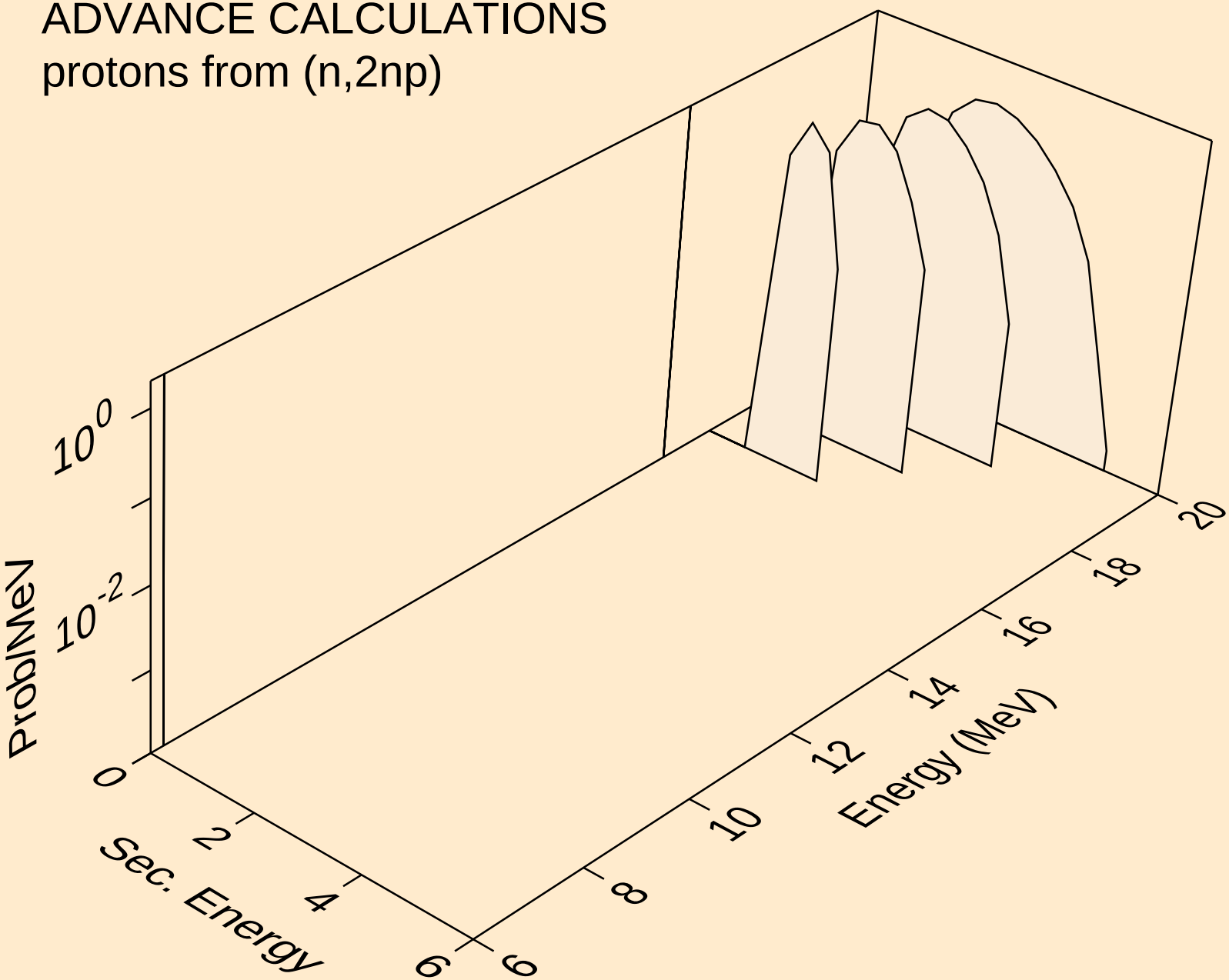
ADVANCE CALCULATIONS
protons from (n,x)



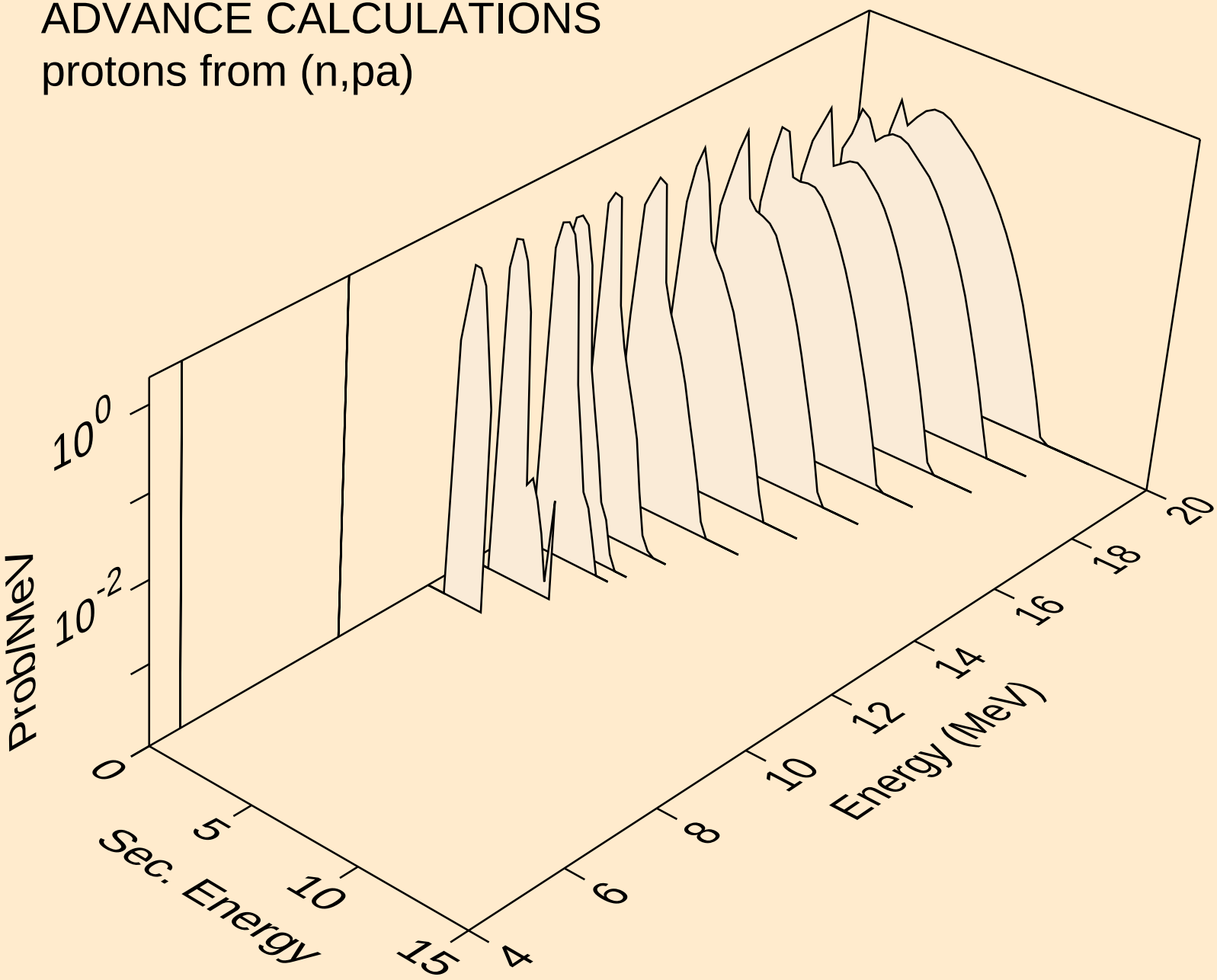
ADVANCE CALCULATIONS
protons from (n,n*)p



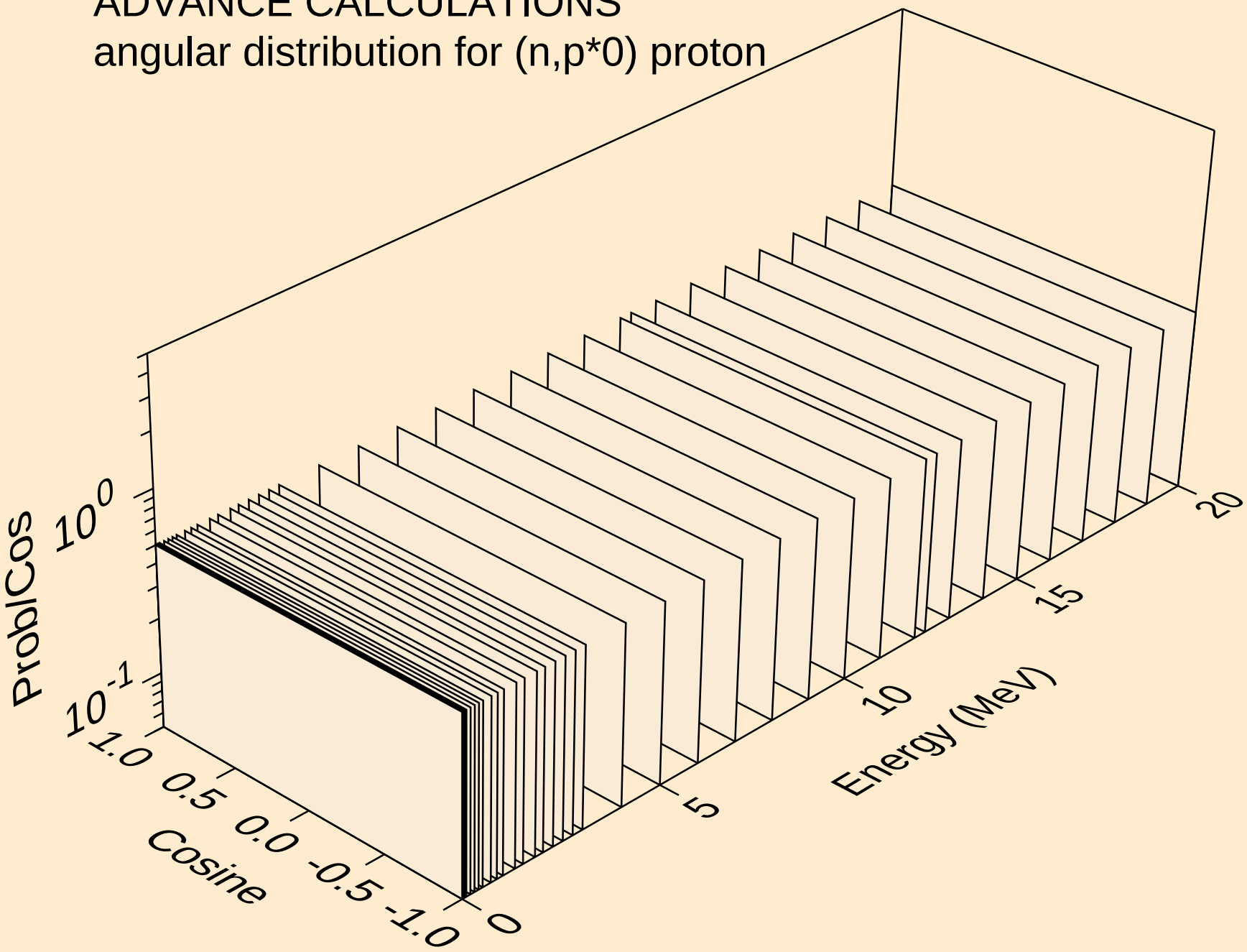
ADVANCE CALCULATIONS
protons from (n,2np)



ADVANCE CALCULATIONS
protons from (n,pa)

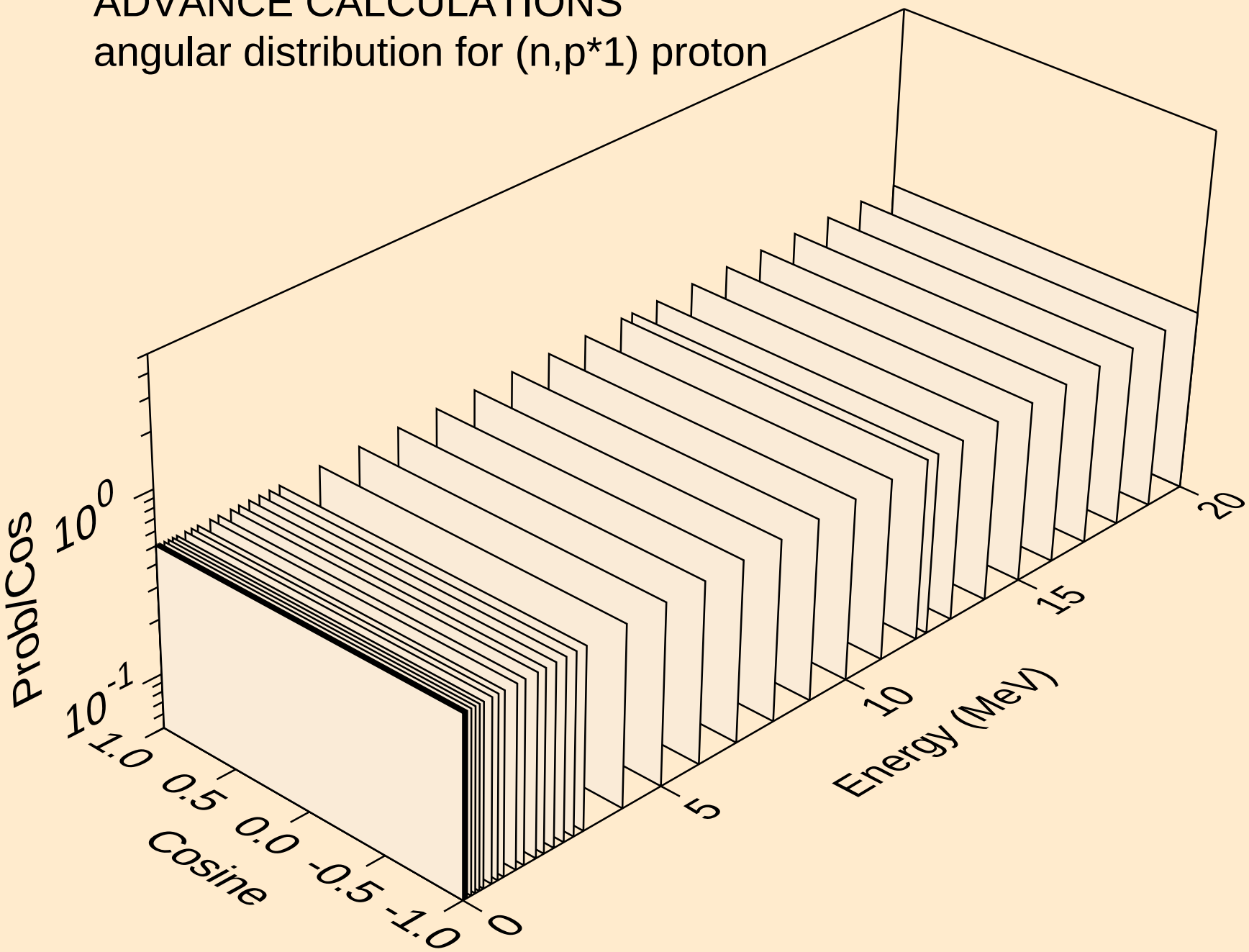


ADVANCE CALCULATIONS
angular distribution for (n,p*0) proton



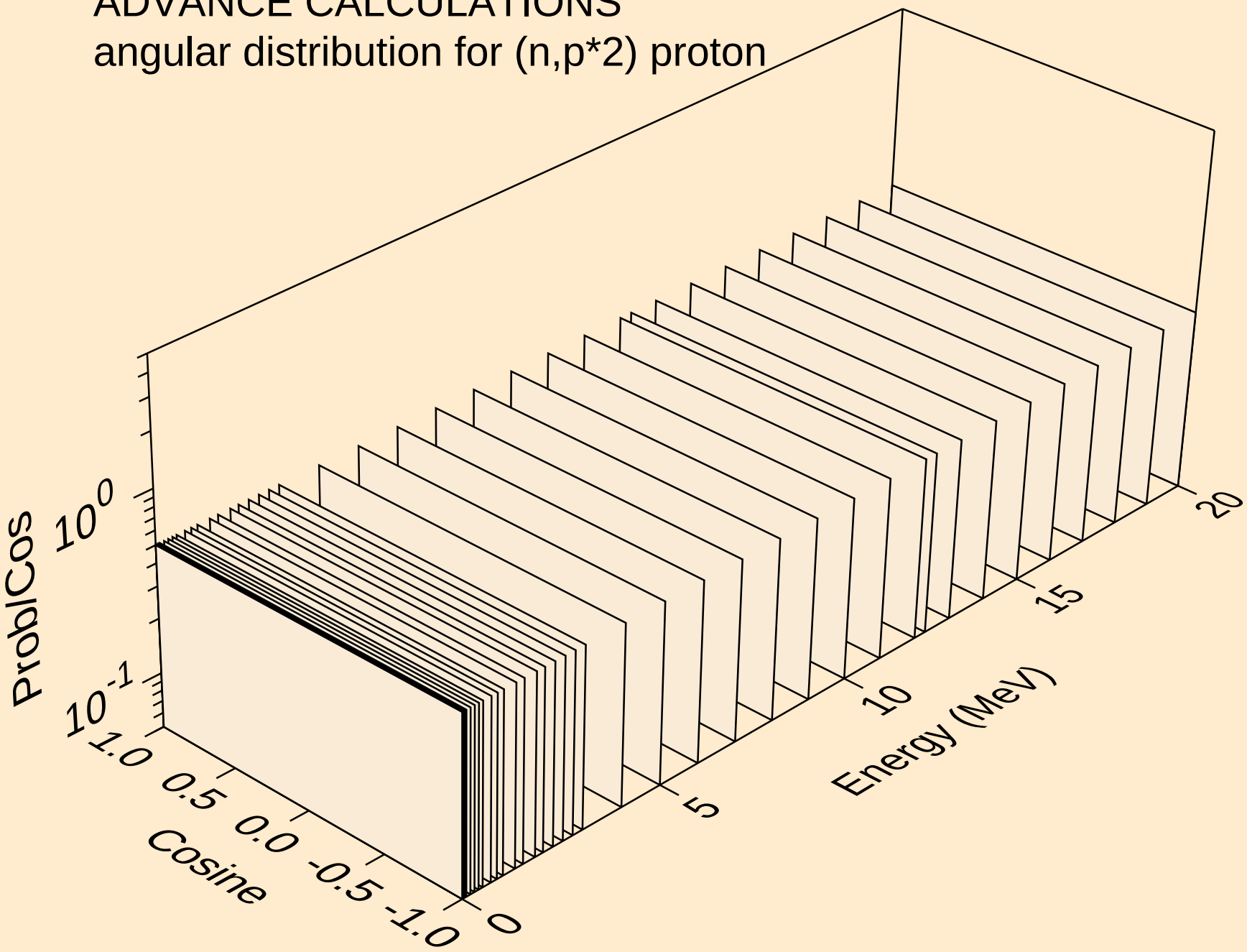
ADVANCE CALCULATIONS

angular distribution for (n,p*1) proton



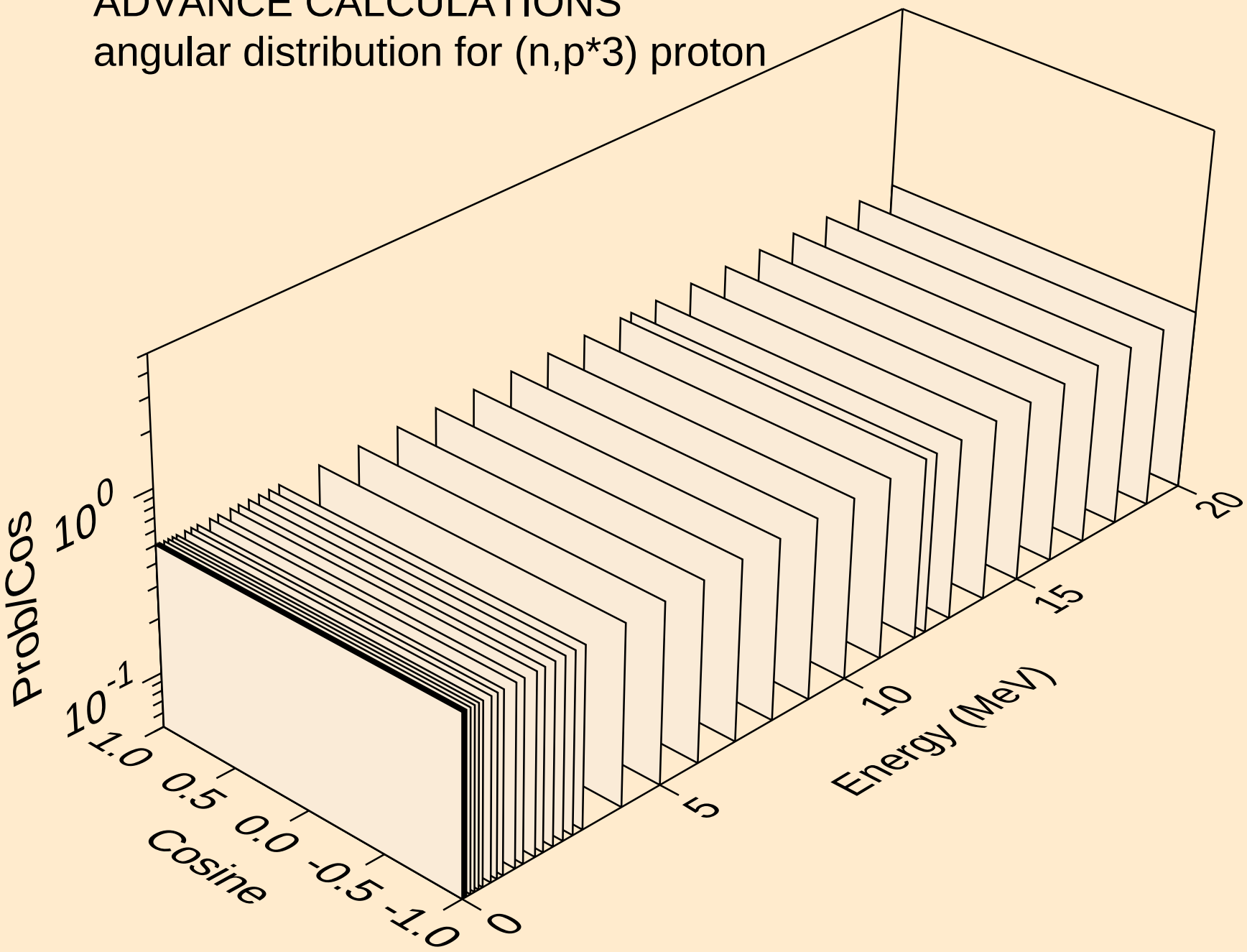
ADVANCE CALCULATIONS

angular distribution for (n,p*2) proton



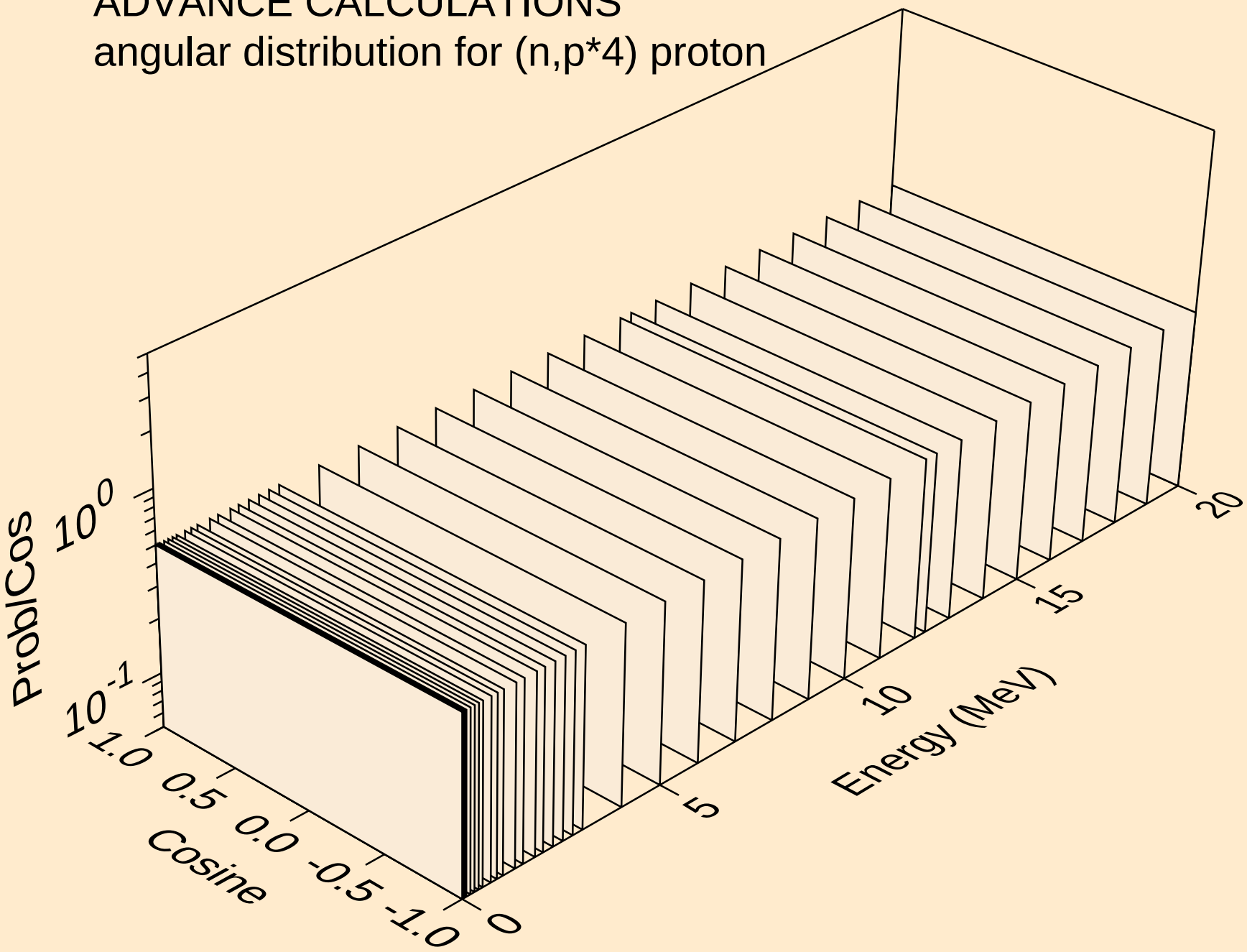
ADVANCE CALCULATIONS

angular distribution for (n,p*3) proton



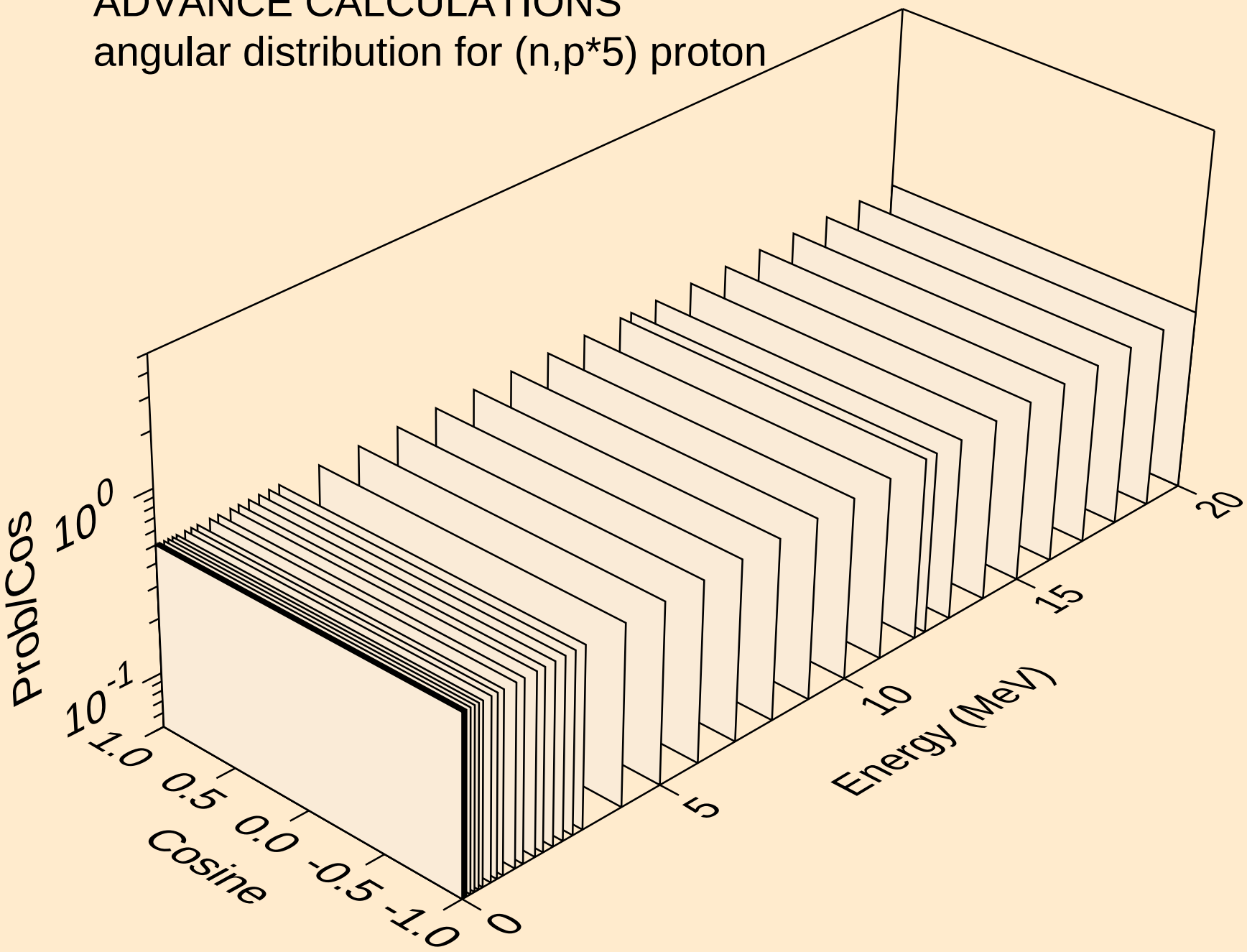
ADVANCE CALCULATIONS

angular distribution for (n,p*4) proton

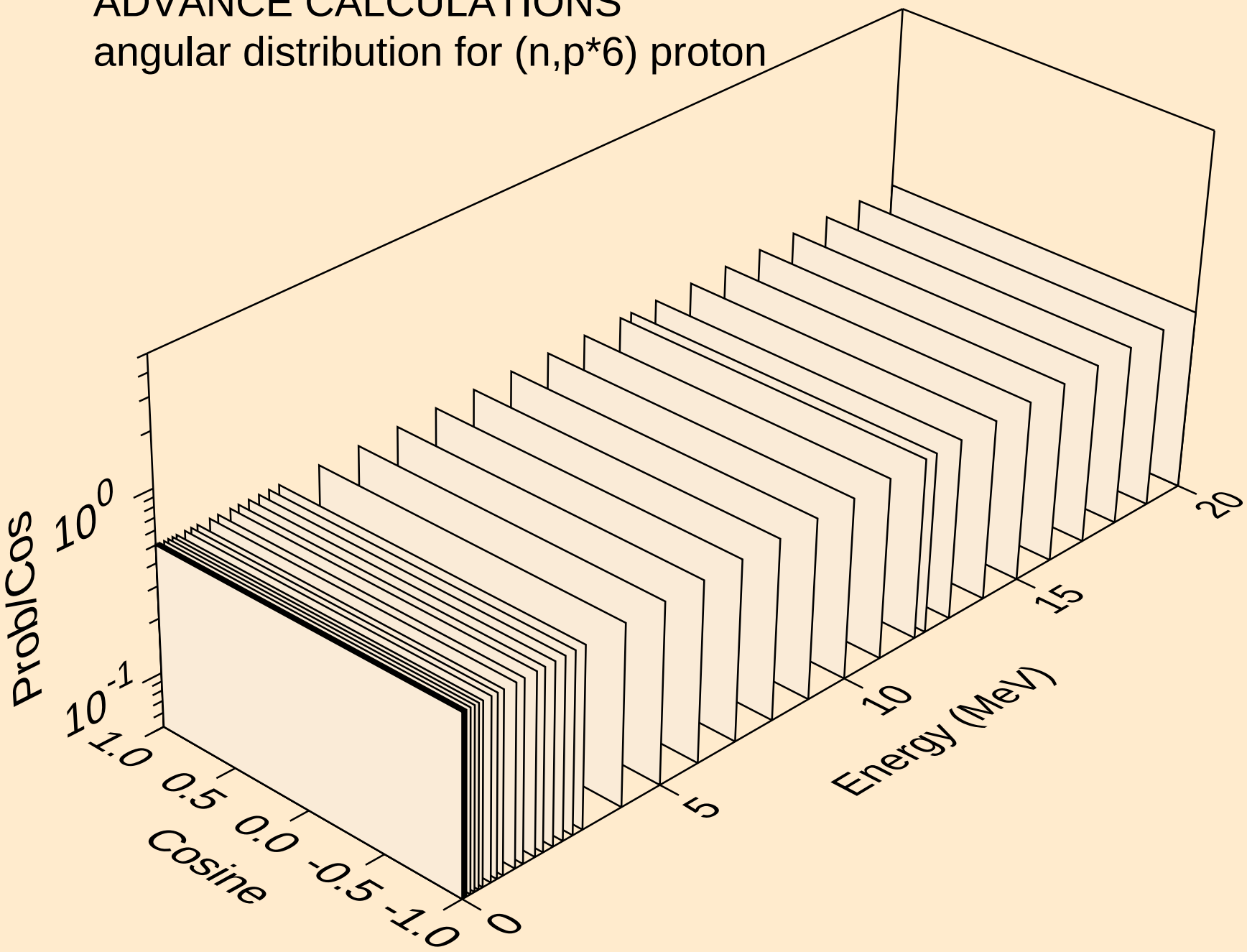


ADVANCE CALCULATIONS

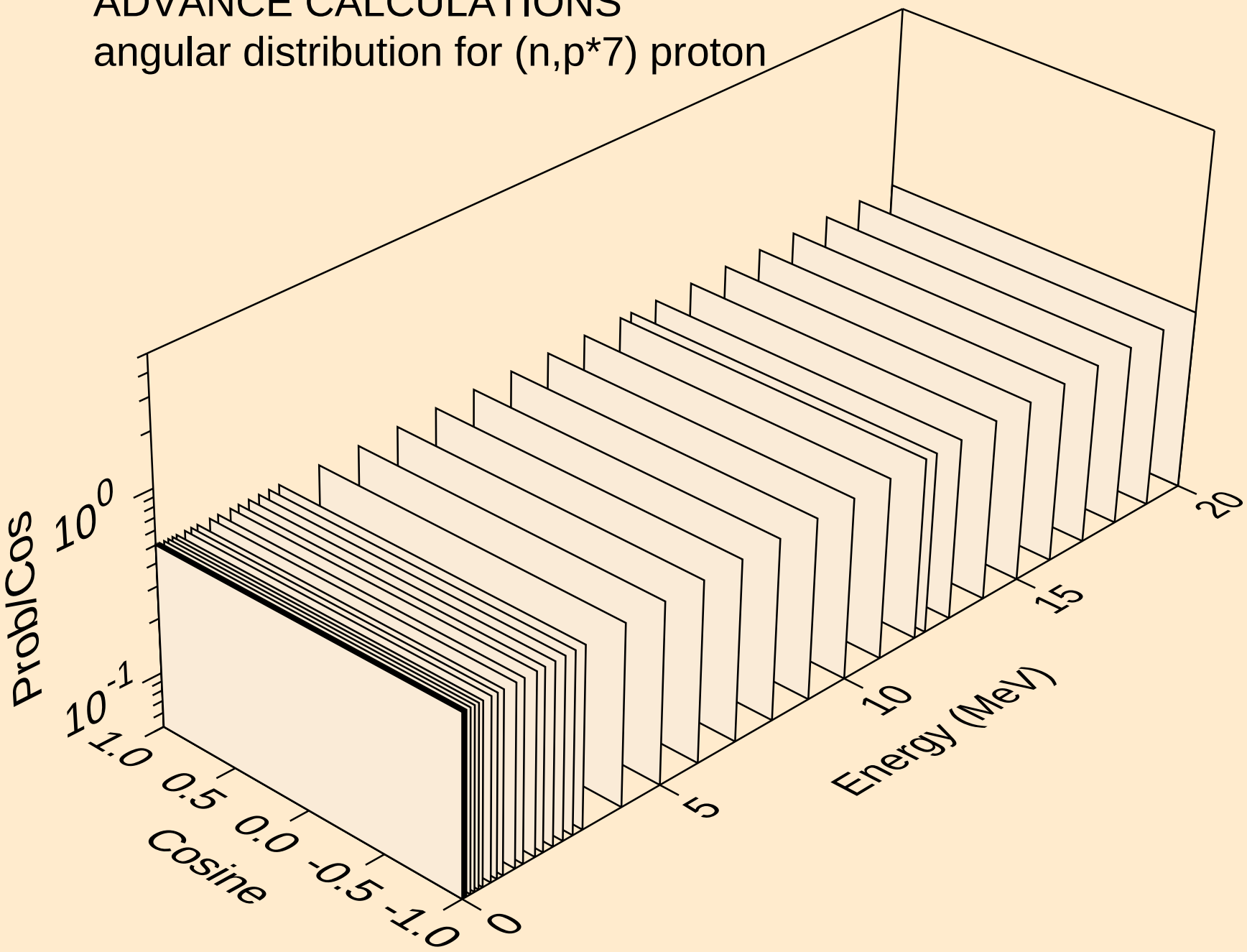
angular distribution for (n,p*5) proton



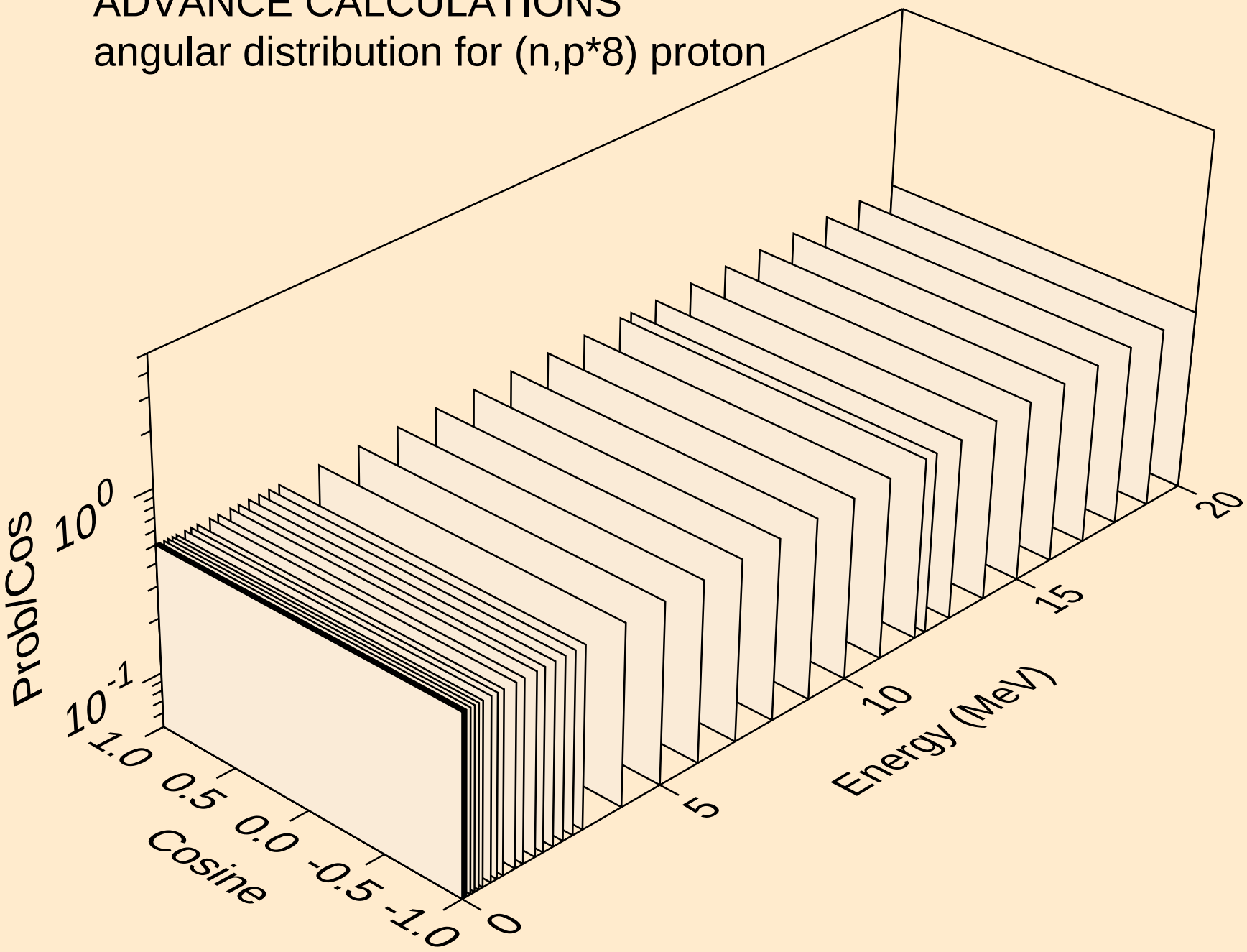
ADVANCE CALCULATIONS
angular distribution for (n,p*6) proton



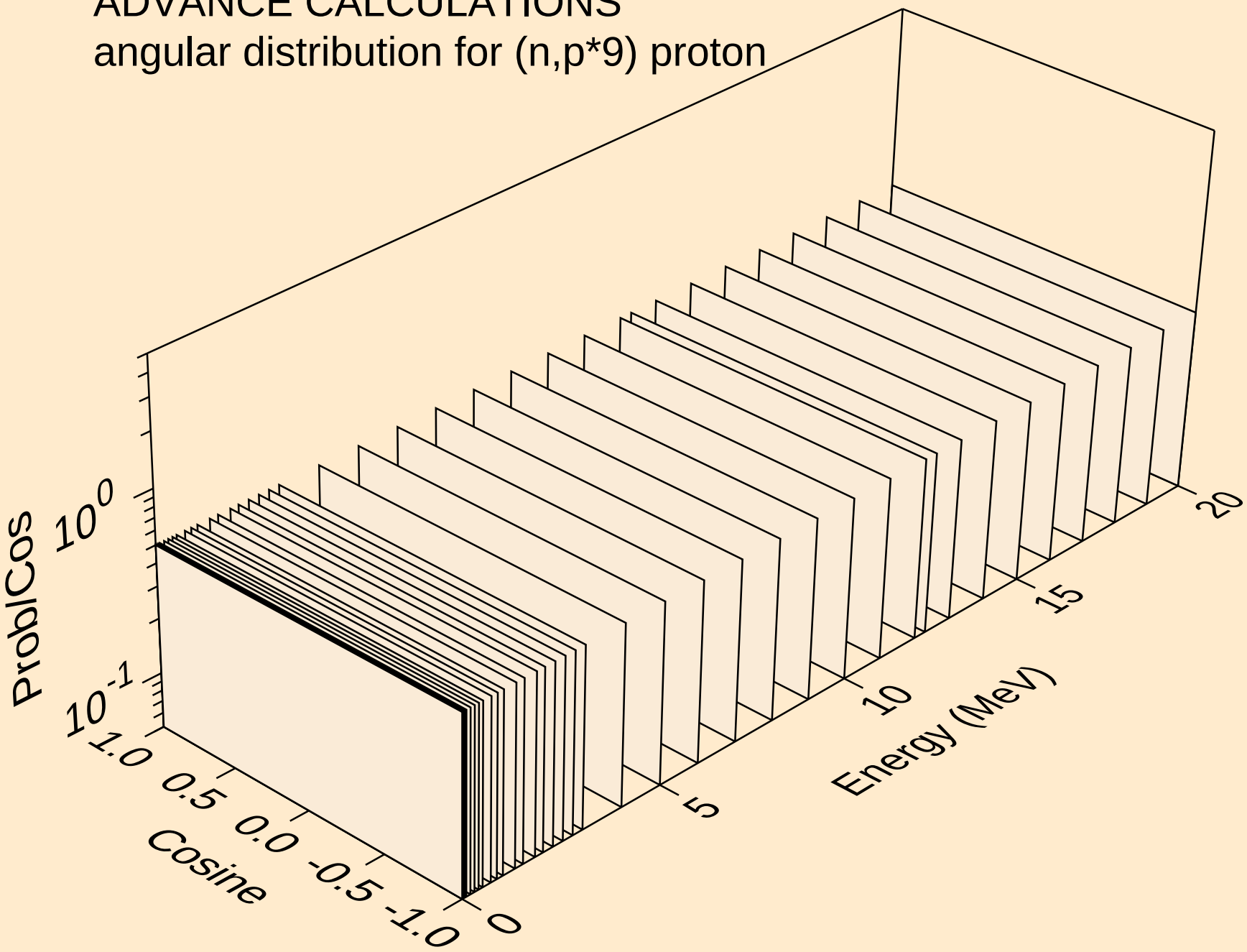
ADVANCE CALCULATIONS
angular distribution for (n,p*7) proton



ADVANCE CALCULATIONS
angular distribution for (n,p*8) proton

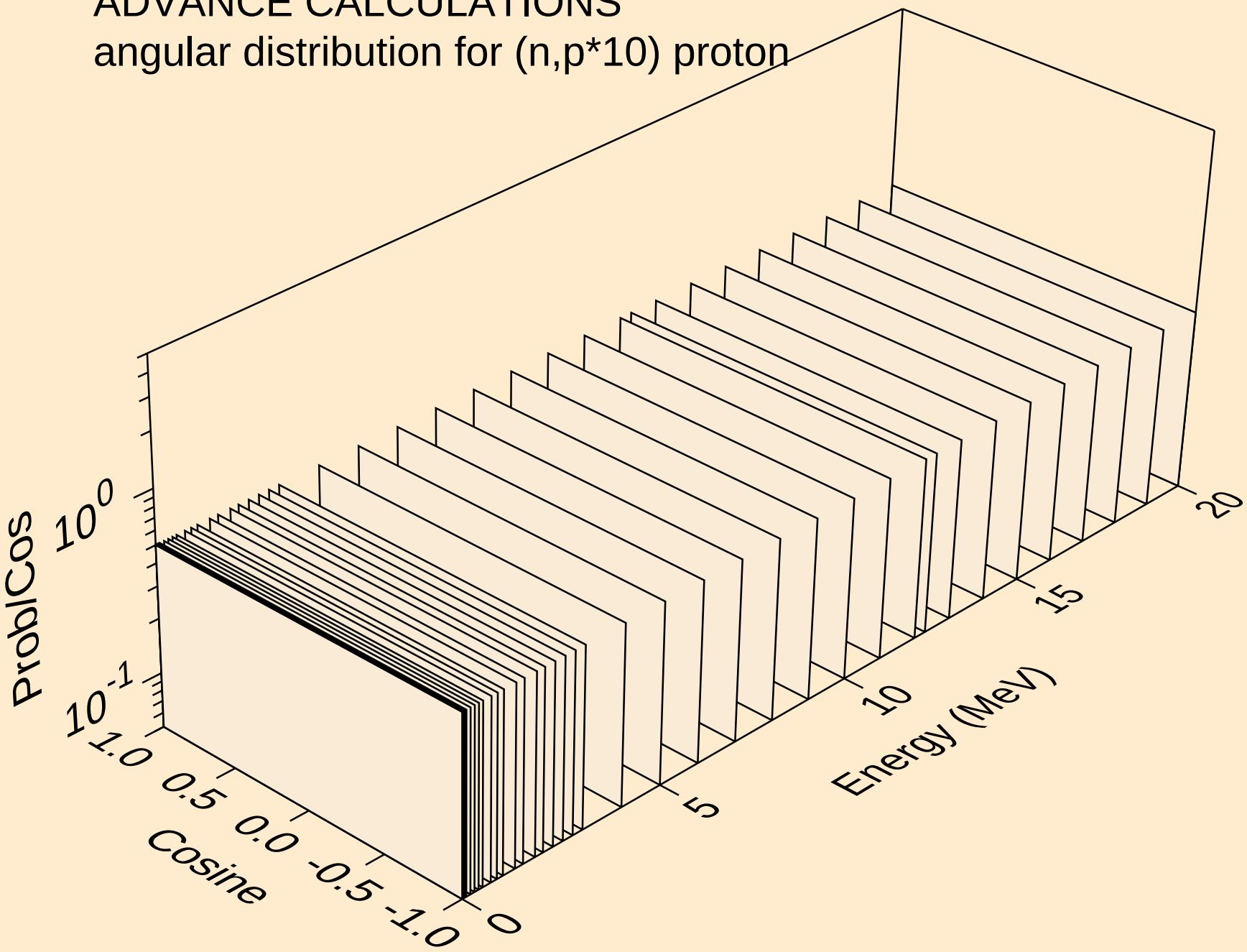


ADVANCE CALCULATIONS
angular distribution for (n,p*9) proton

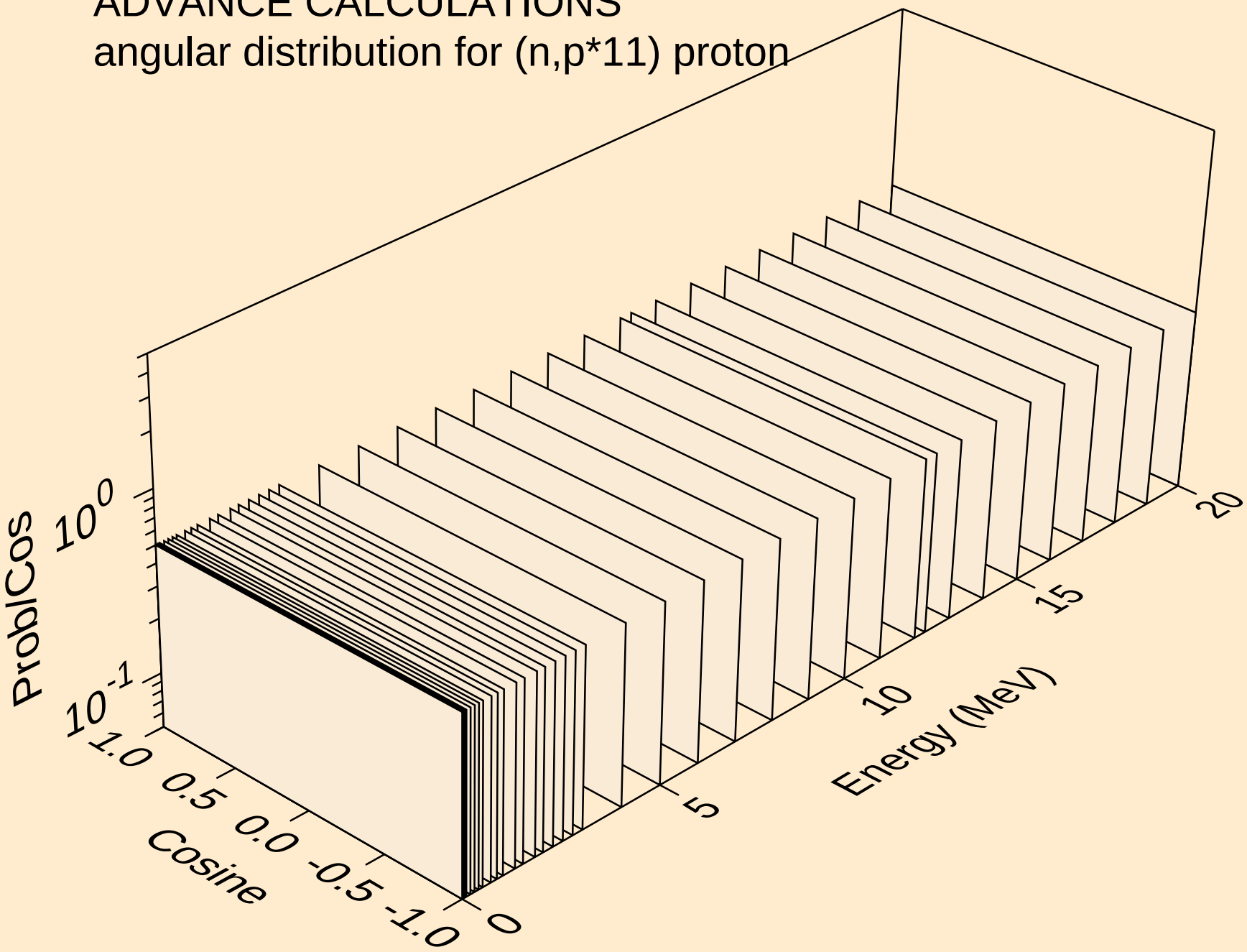


ADVANCE CALCULATIONS

angular distribution for (n,p*10) proton

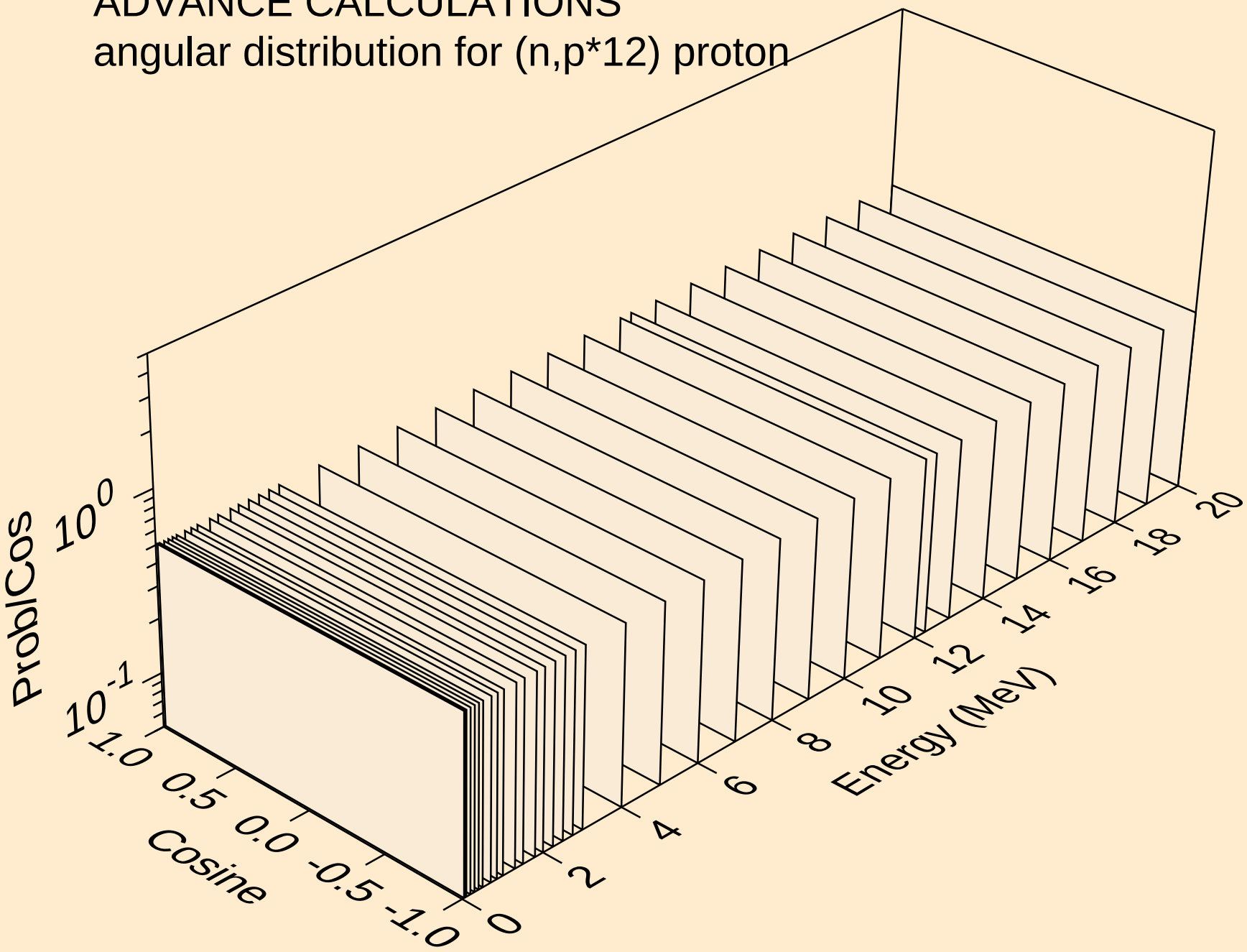


ADVANCE CALCULATIONS
angular distribution for (n,p*11) proton



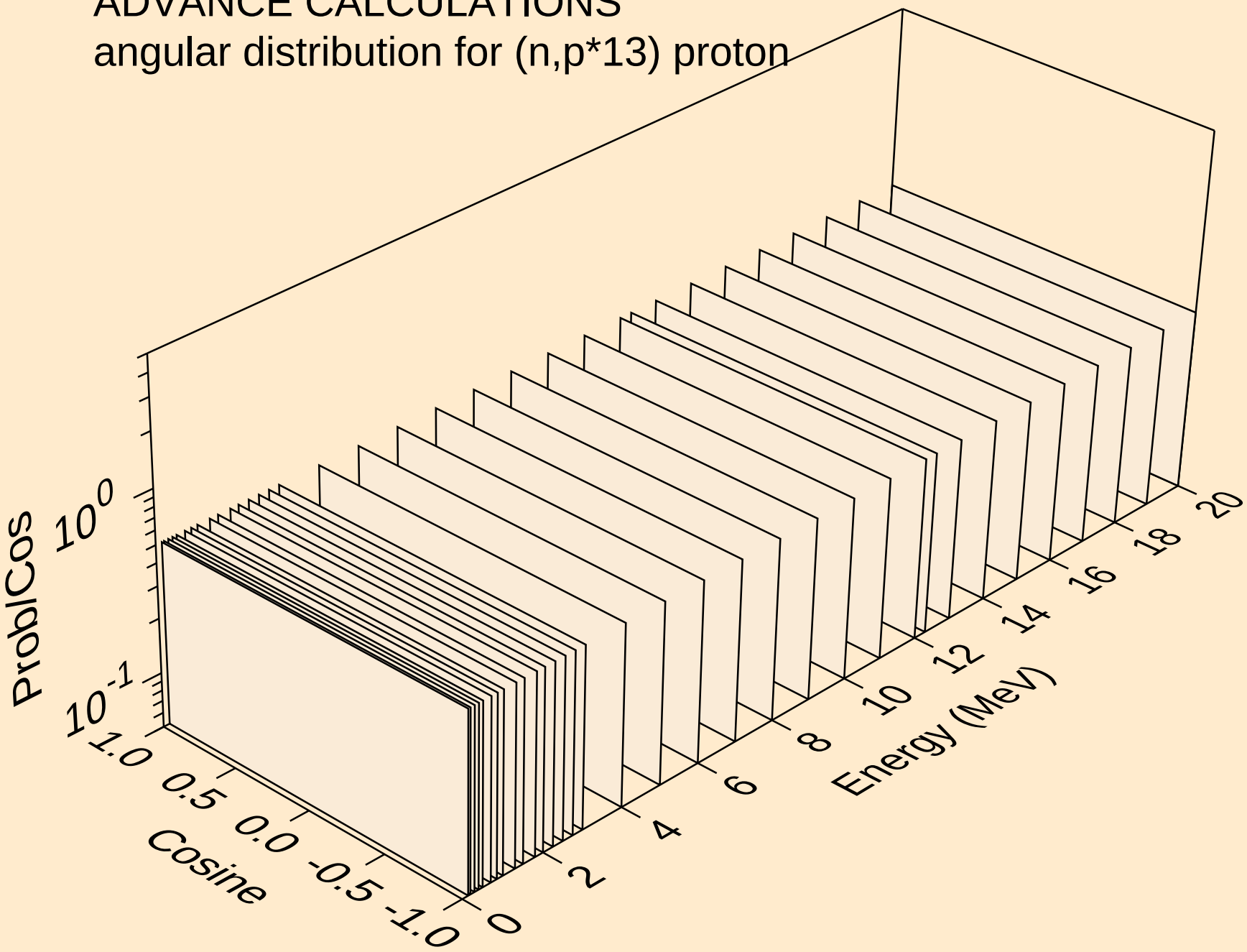
ADVANCE CALCULATIONS

angular distribution for (n,p*12) proton



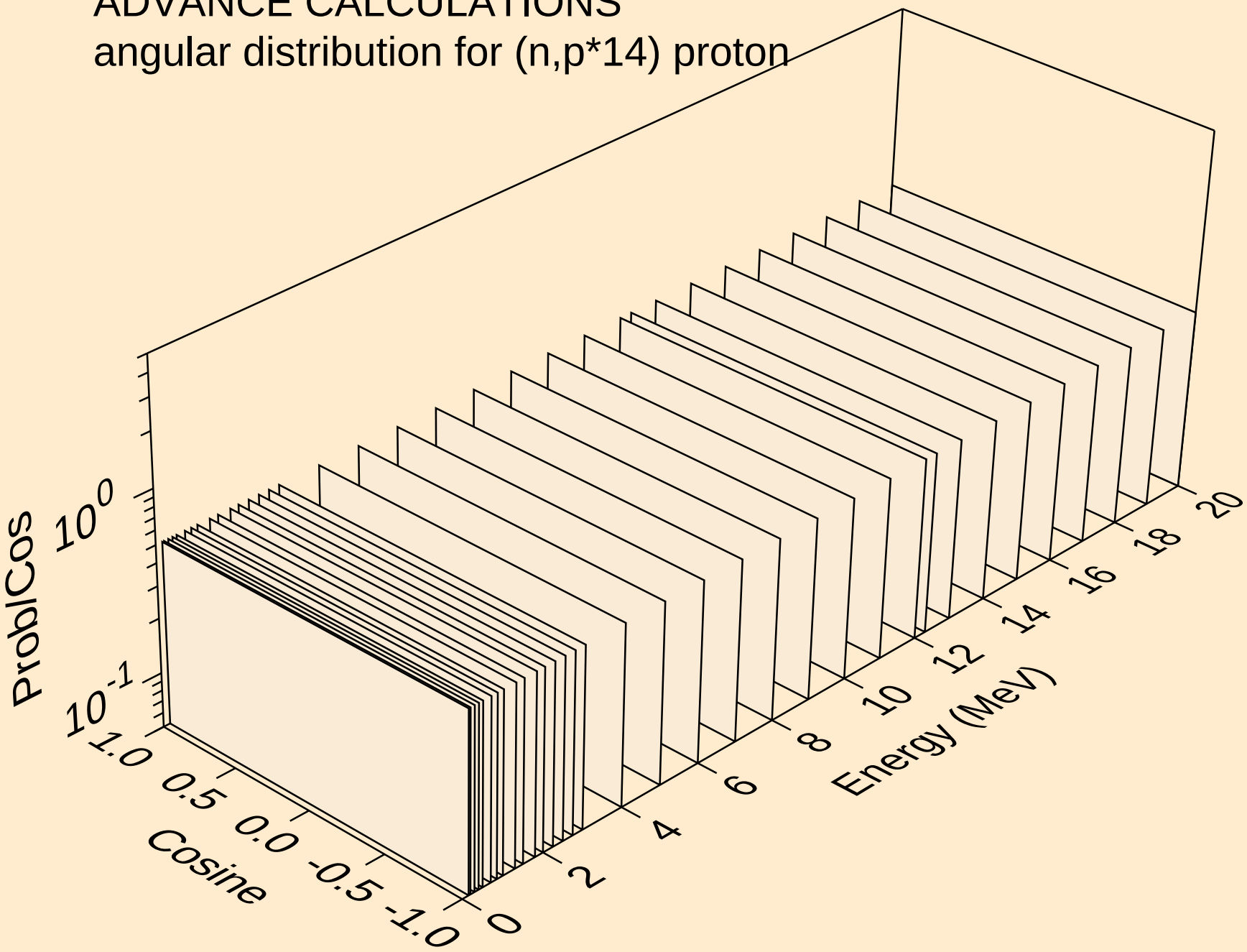
ADVANCE CALCULATIONS

angular distribution for (n,p*13) proton



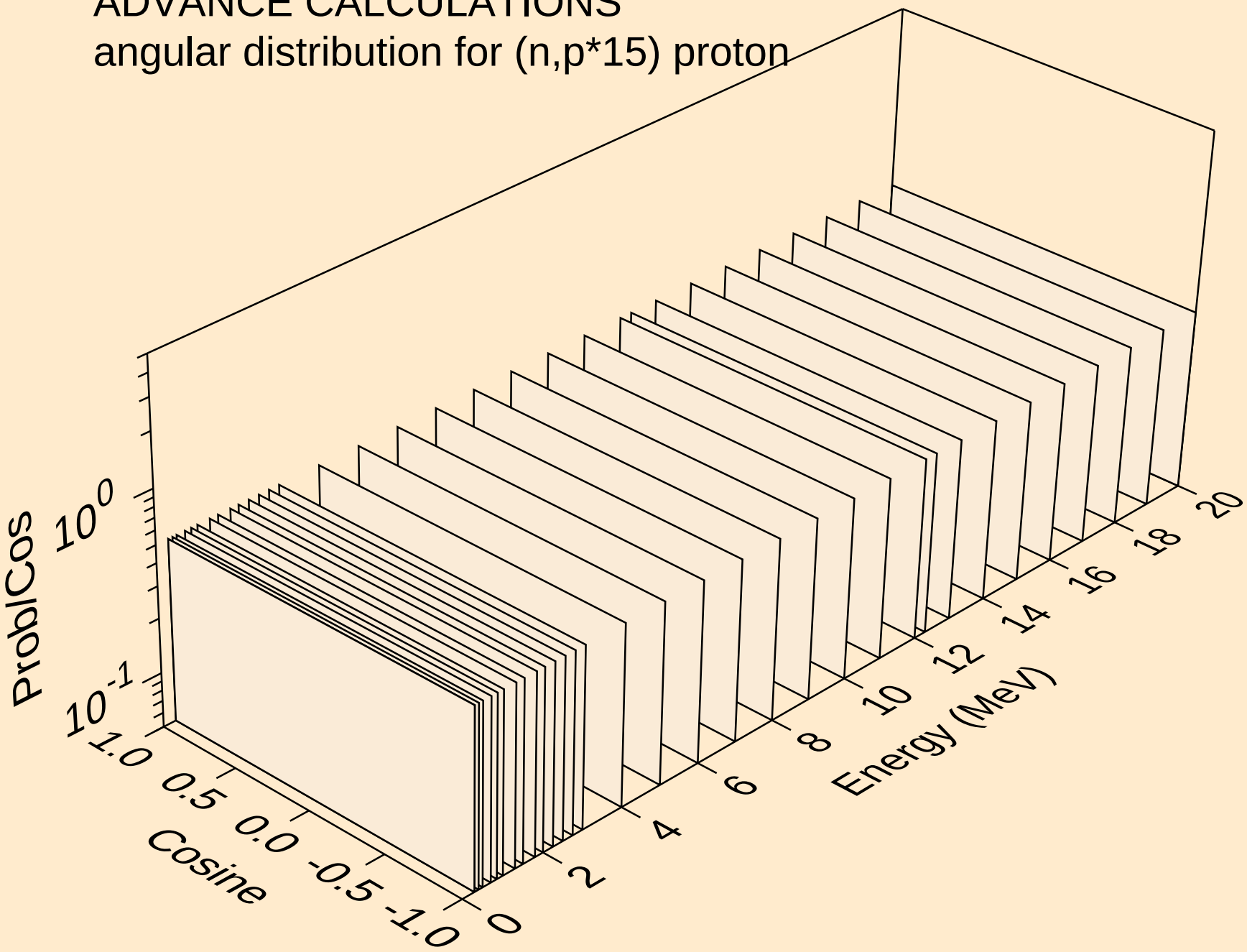
ADVANCE CALCULATIONS

angular distribution for (n,p*14) proton



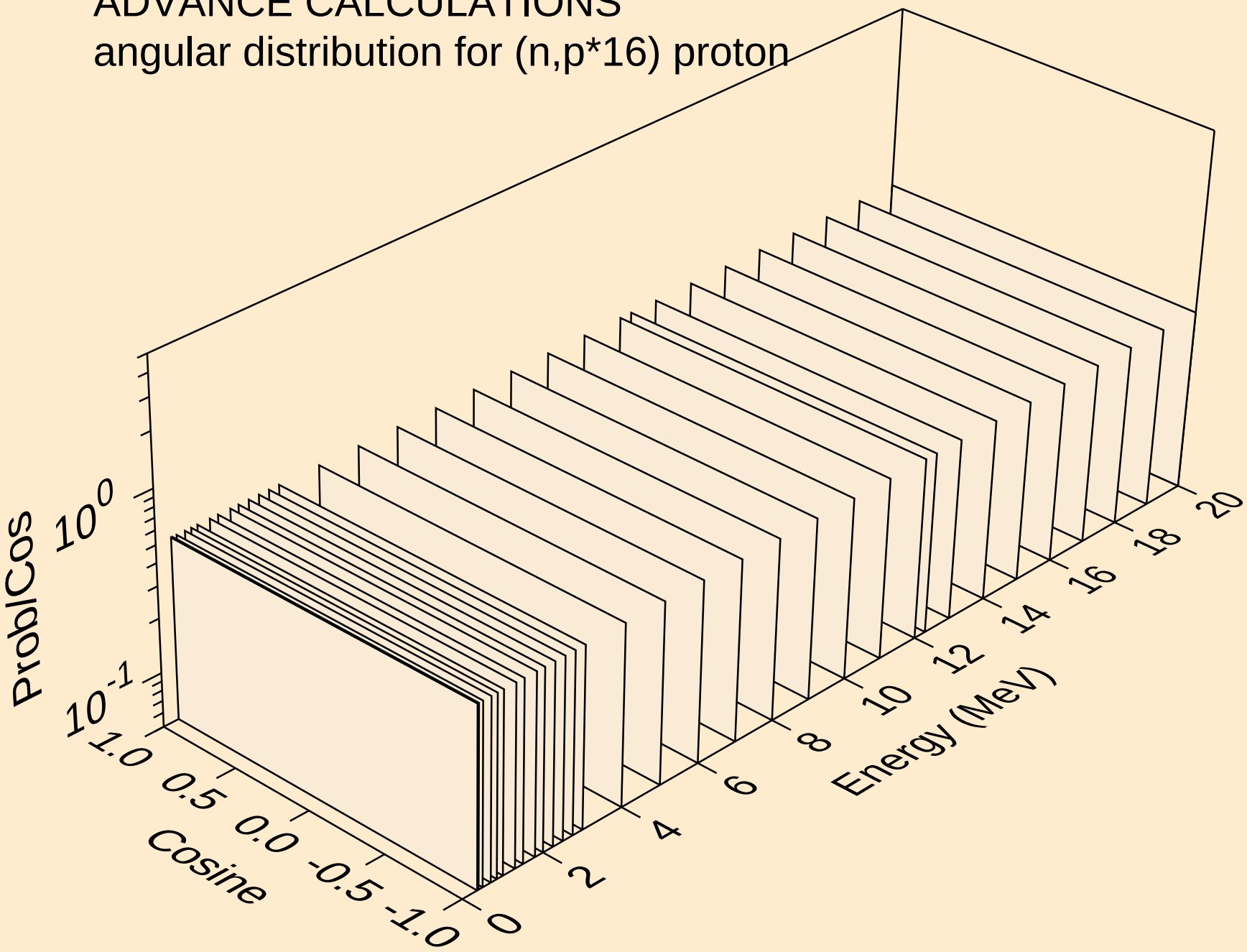
ADVANCE CALCULATIONS

angular distribution for (n,p*15) proton

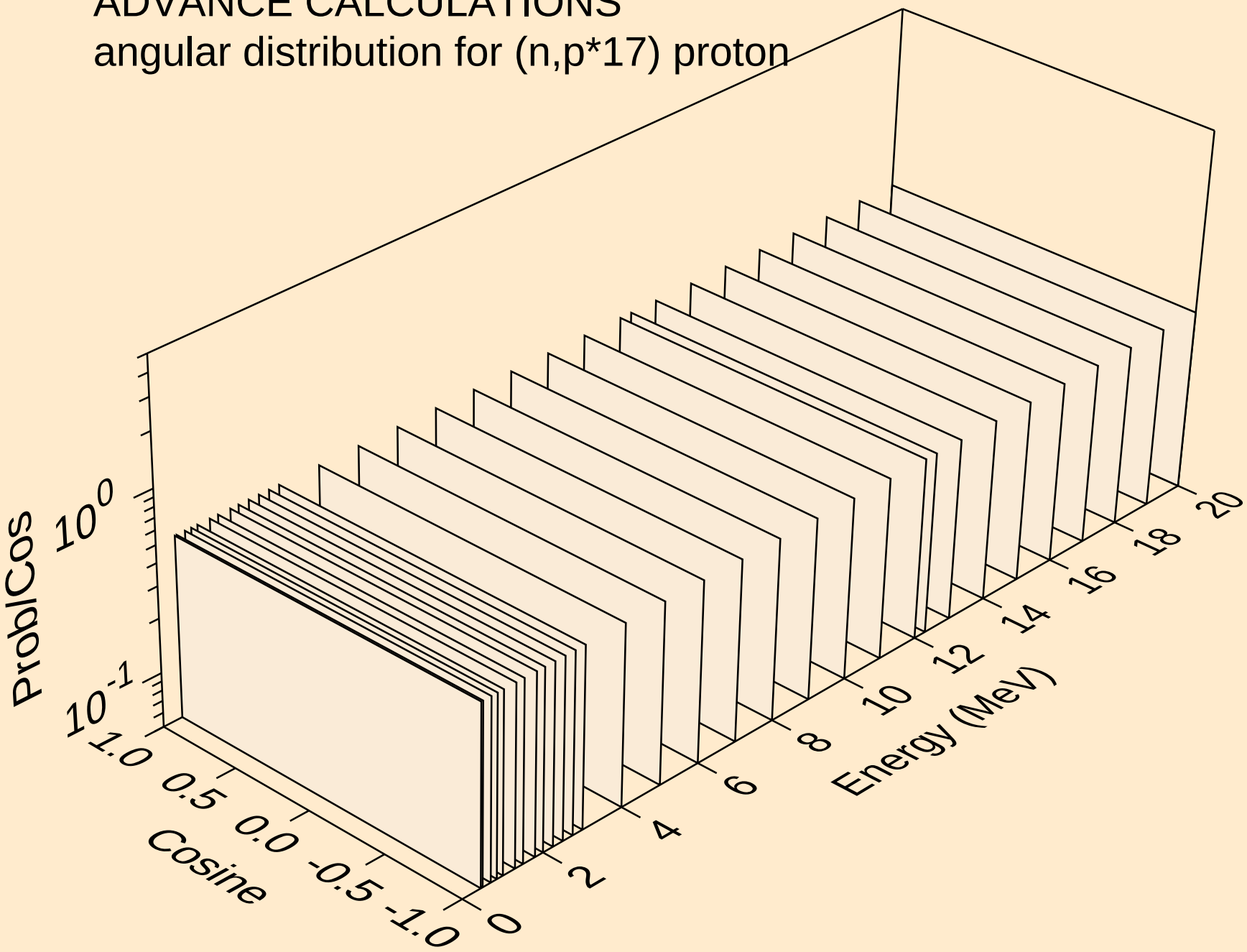


ADVANCE CALCULATIONS

angular distribution for (n,p*16) proton

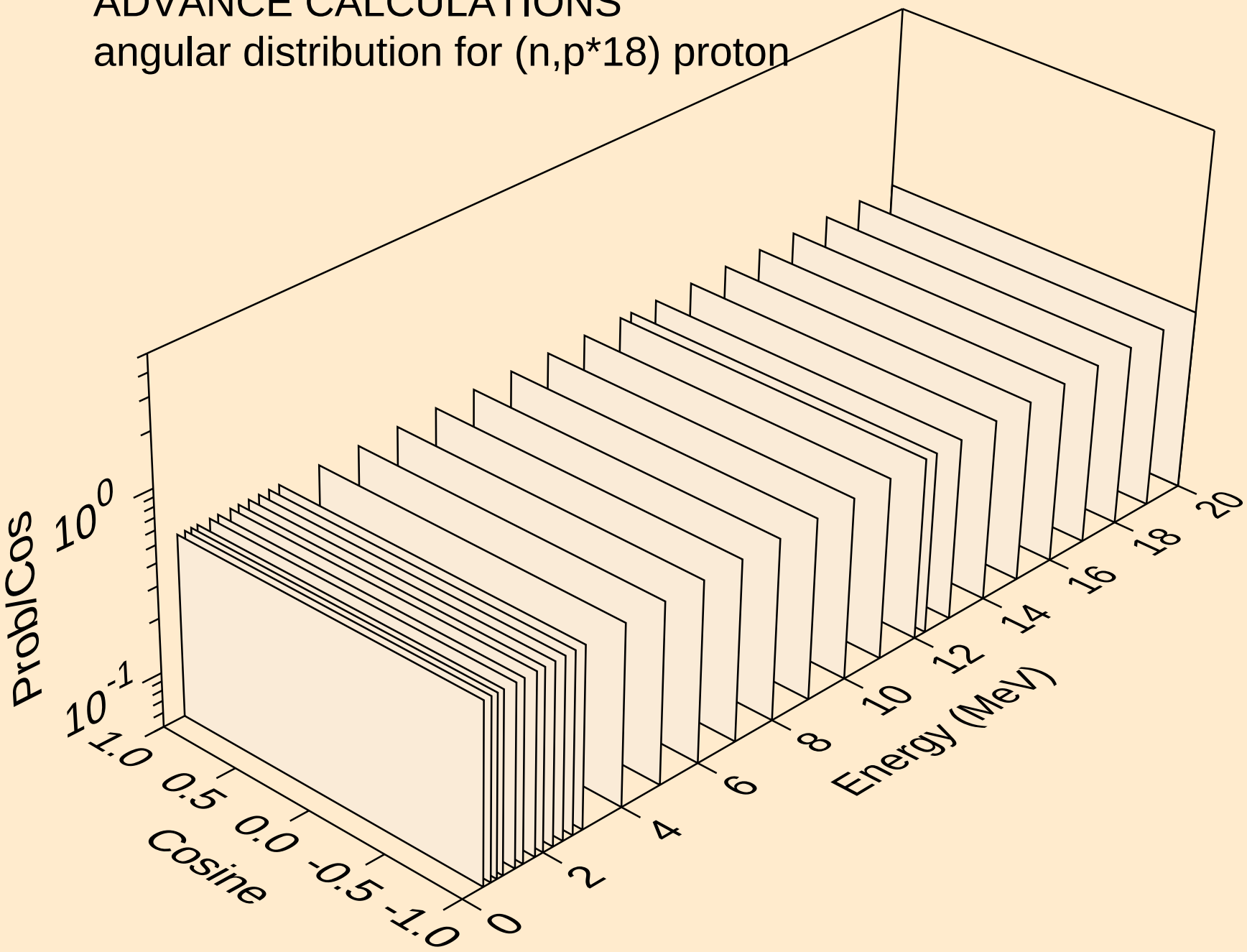


ADVANCE CALCULATIONS
angular distribution for (n,p*17) proton



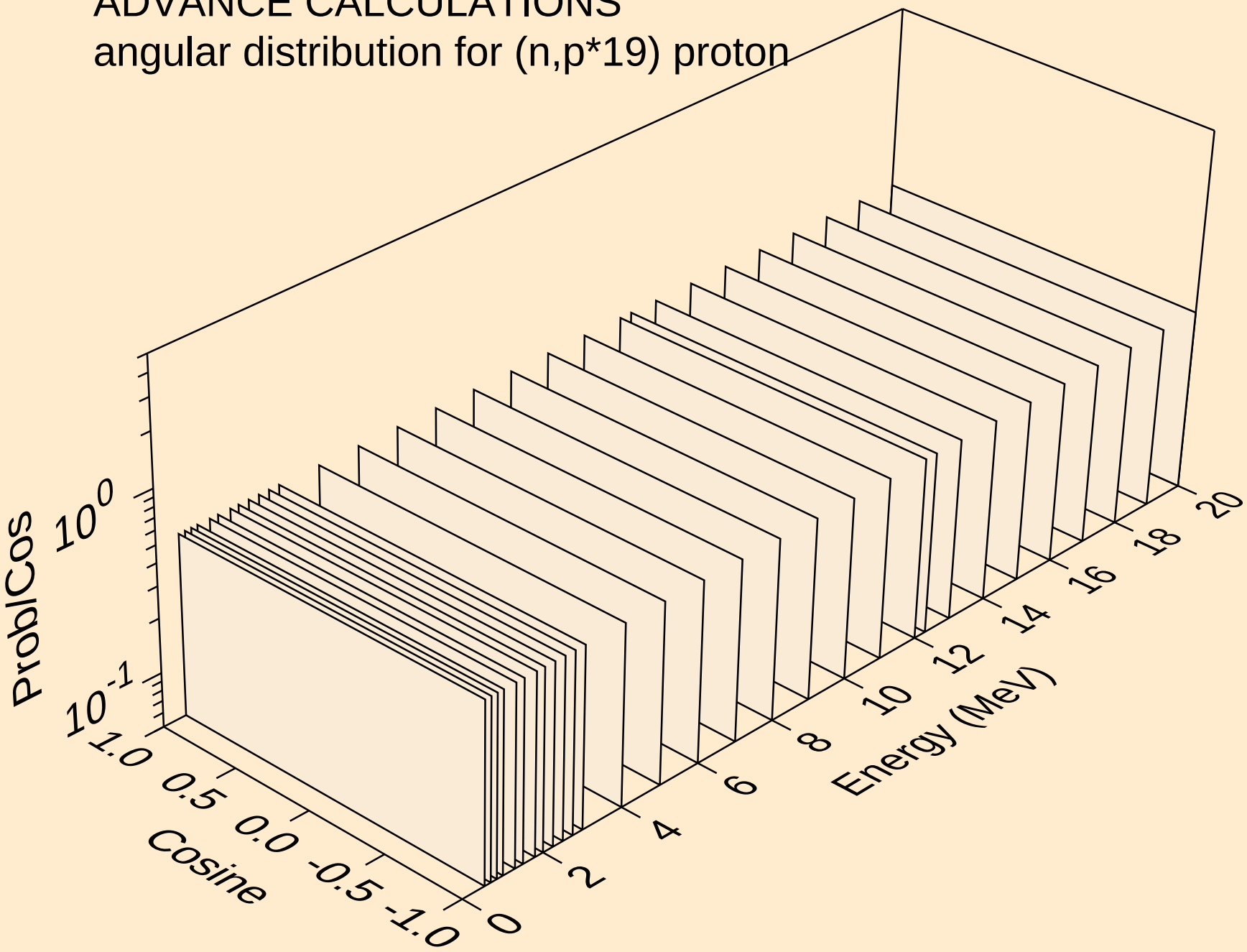
ADVANCE CALCULATIONS

angular distribution for (n,p*18) proton



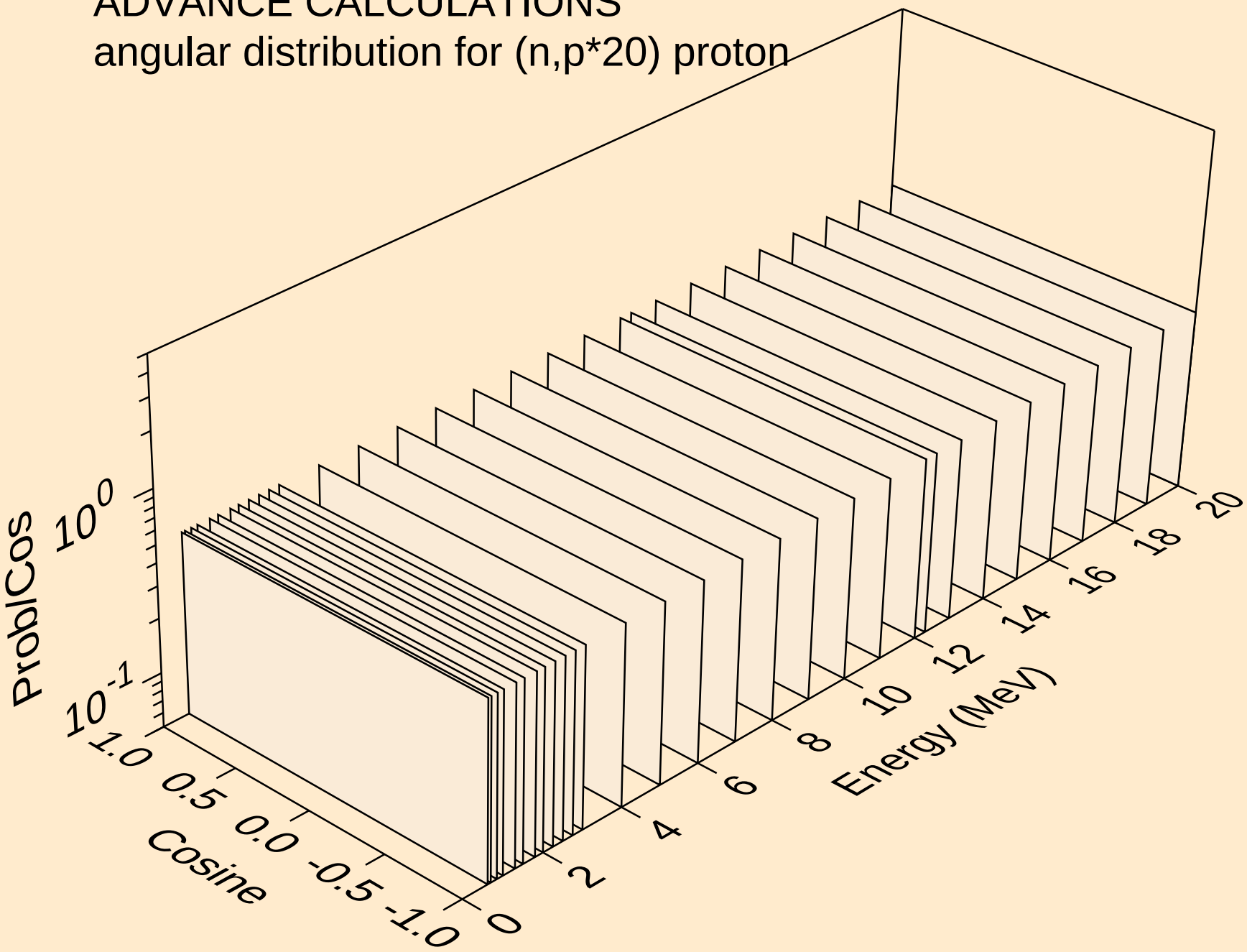
ADVANCE CALCULATIONS

angular distribution for (n,p*19) proton



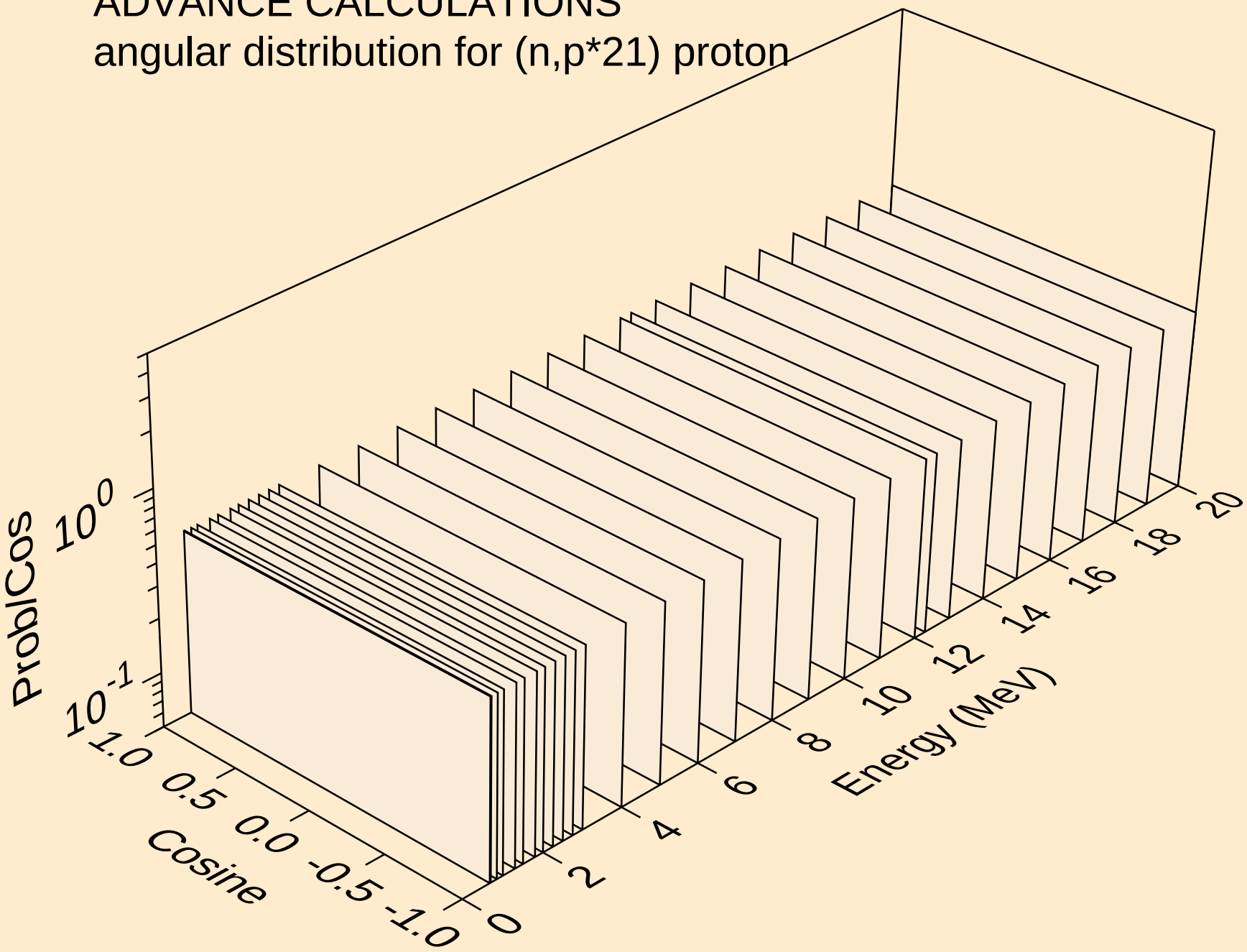
ADVANCE CALCULATIONS

angular distribution for (n,p*20) proton



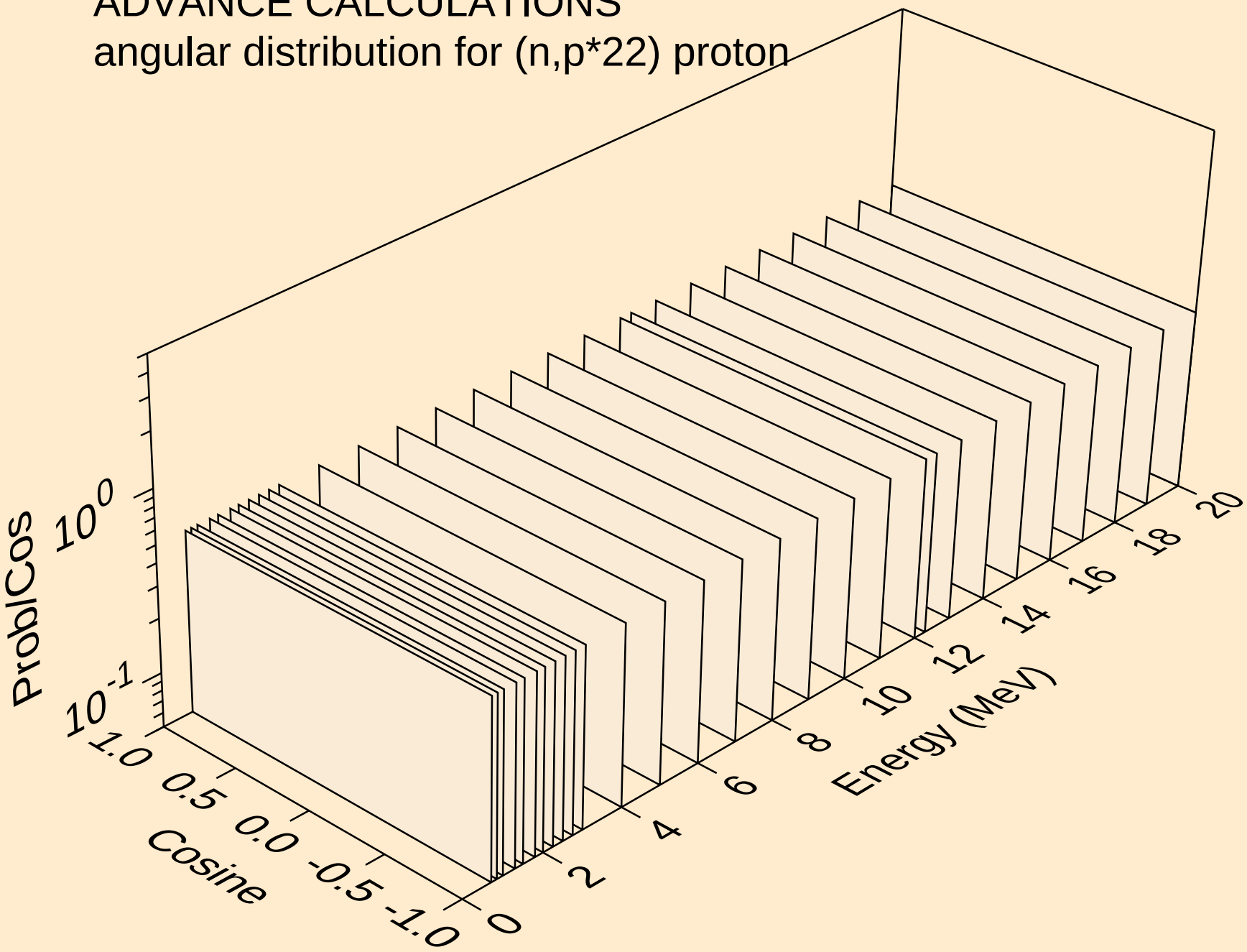
ADVANCE CALCULATIONS

angular distribution for (n,p*21) proton



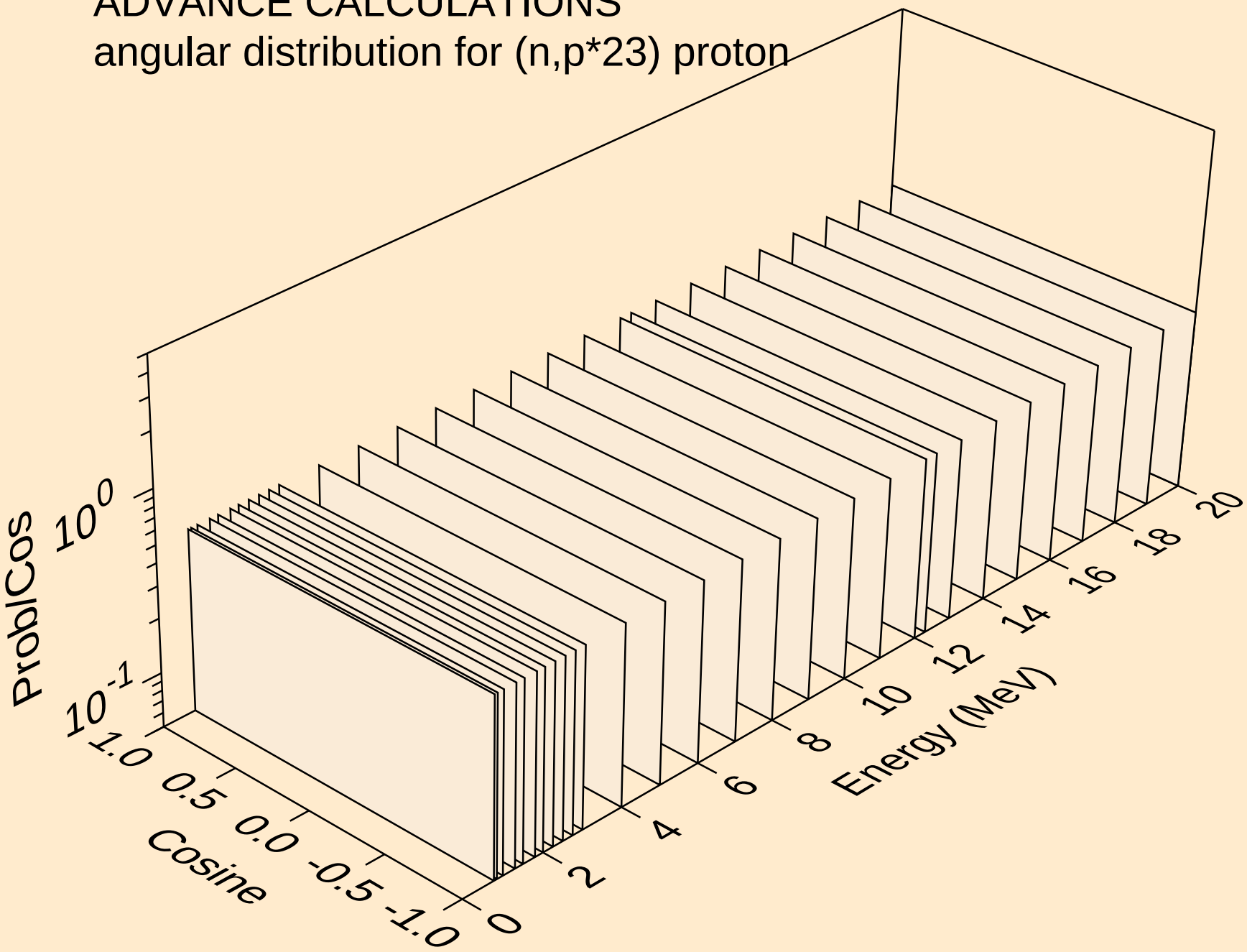
ADVANCE CALCULATIONS

angular distribution for (n,p*22) proton



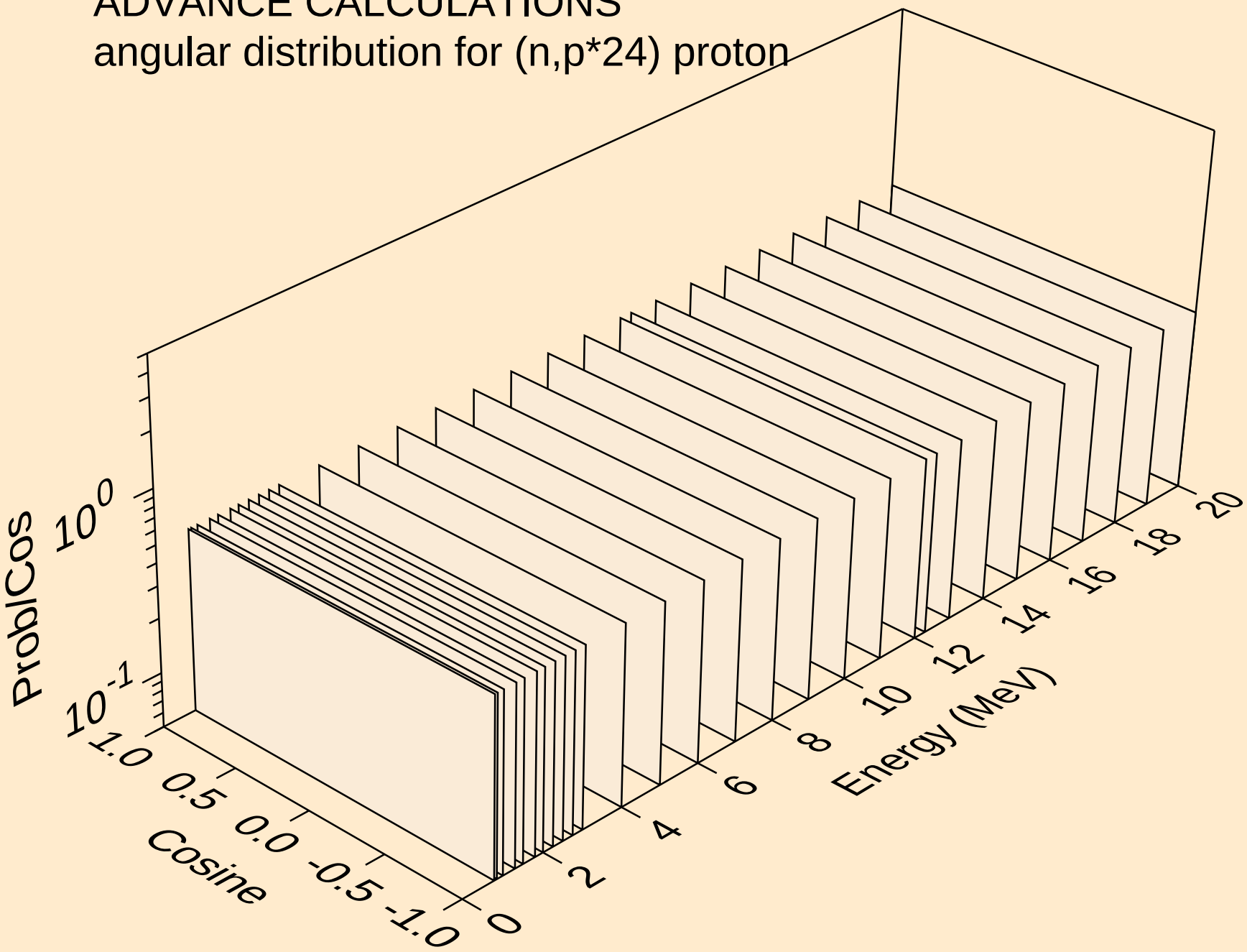
ADVANCE CALCULATIONS

angular distribution for (n,p*23) proton



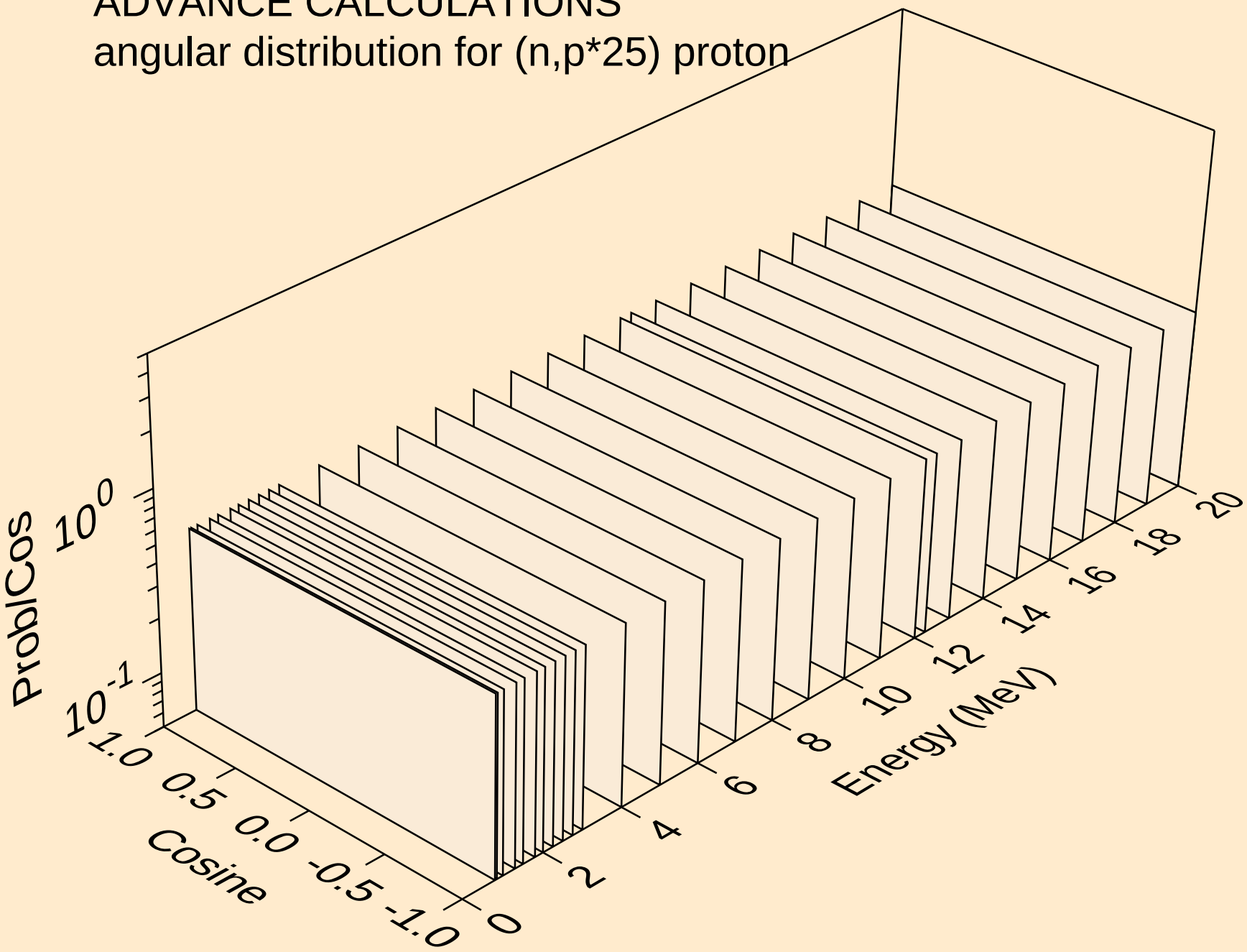
ADVANCE CALCULATIONS

angular distribution for (n,p*24) proton

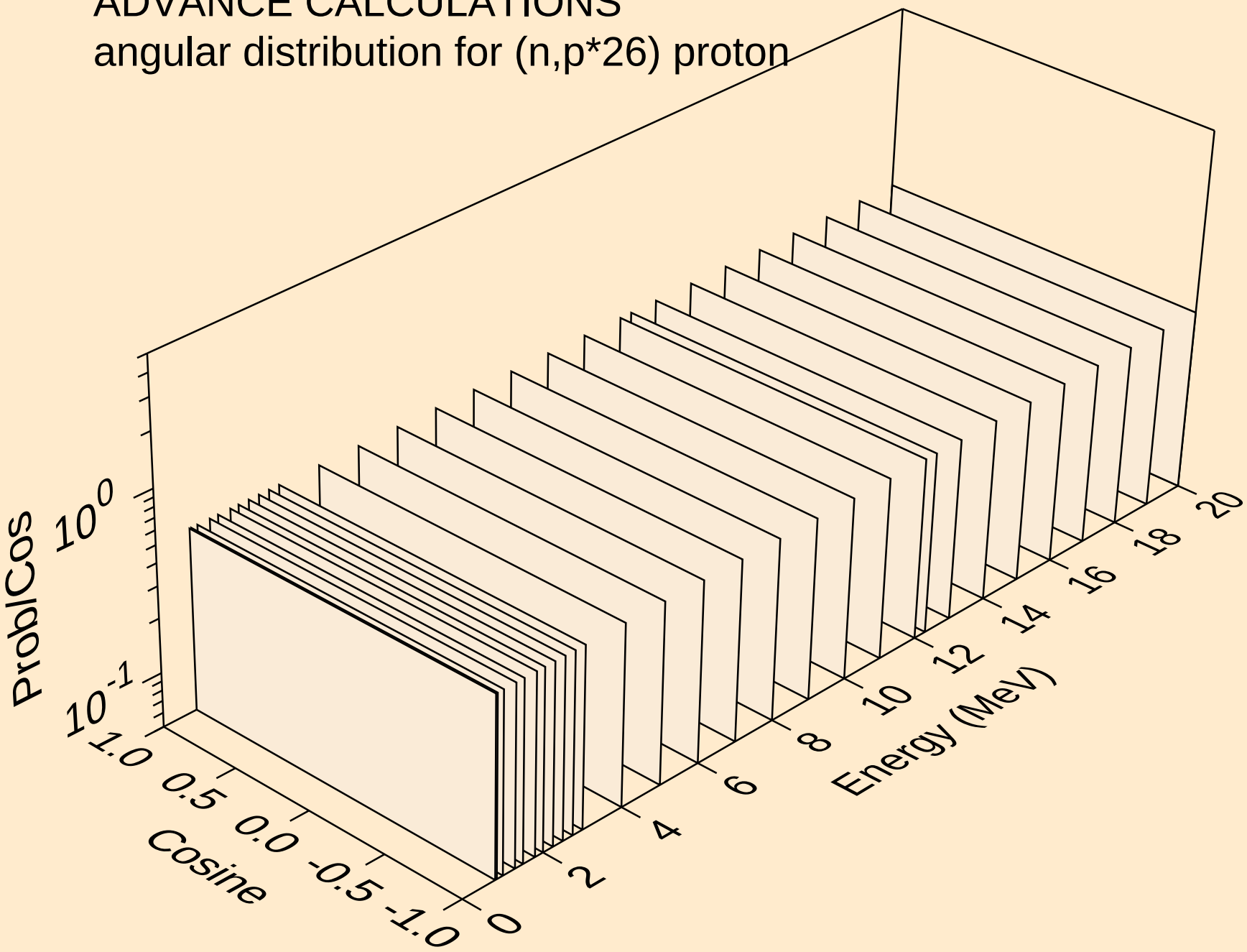


ADVANCE CALCULATIONS

angular distribution for (n,p*25) proton

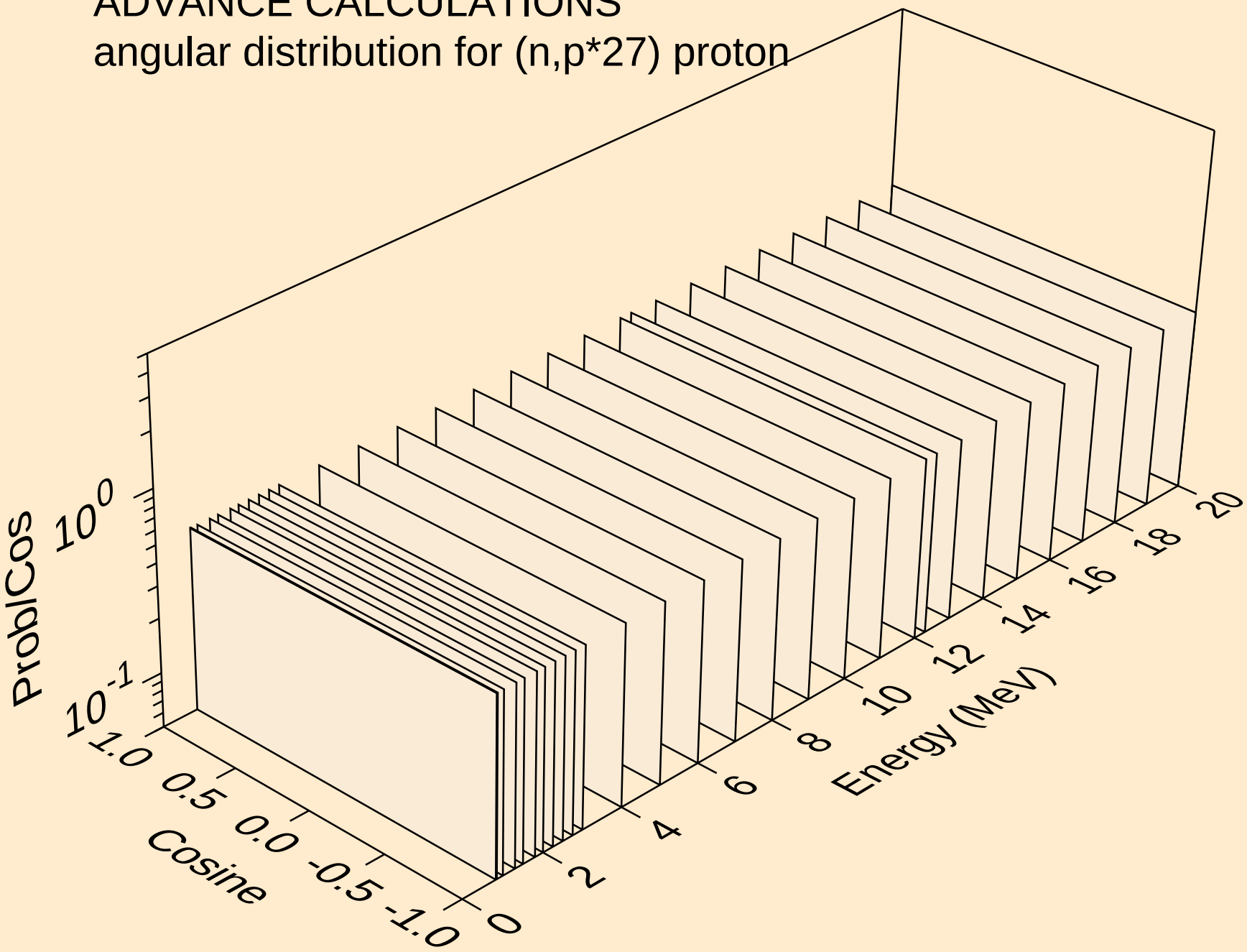


ADVANCE CALCULATIONS
angular distribution for (n,p*26) proton



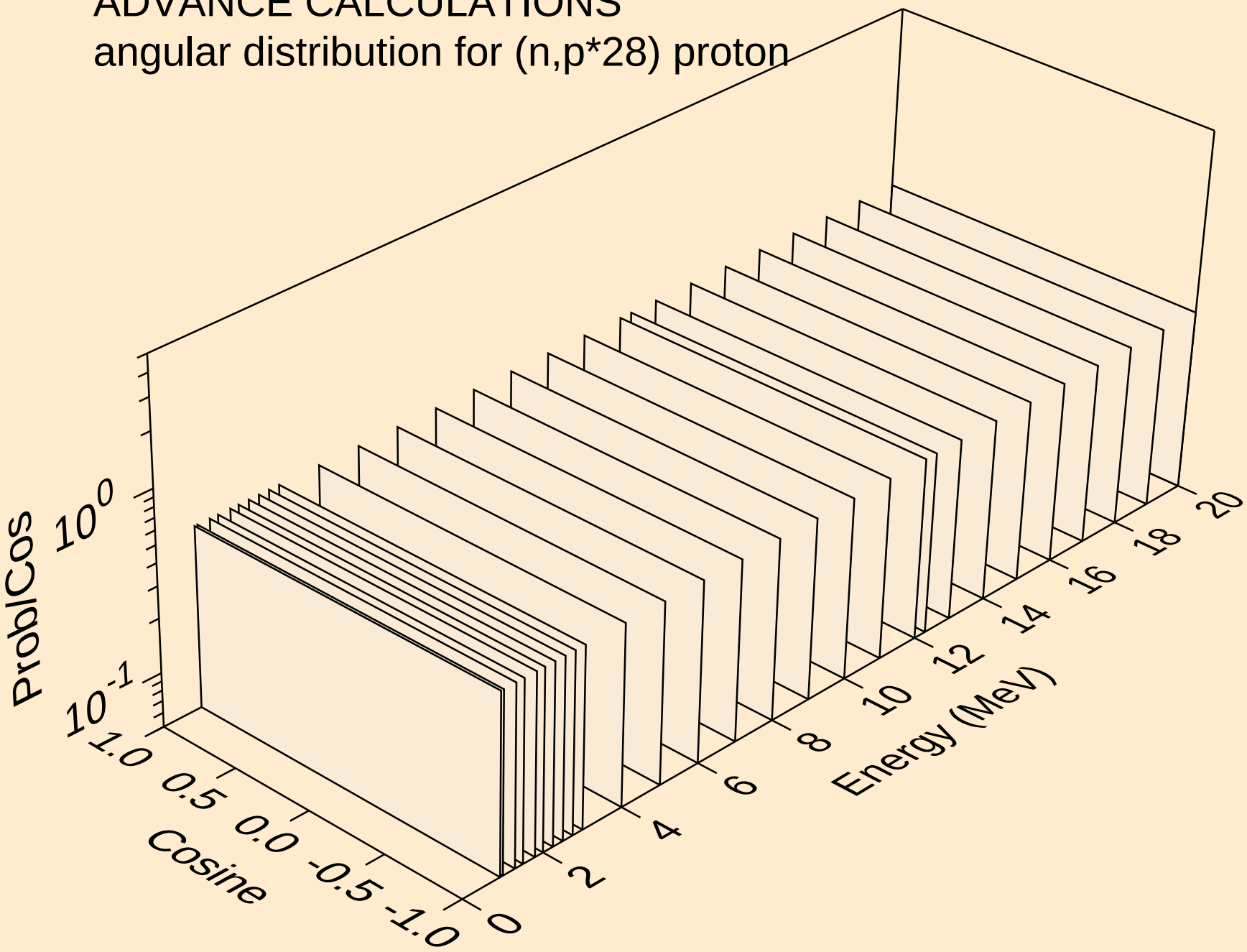
ADVANCE CALCULATIONS

angular distribution for (n,p*27) proton



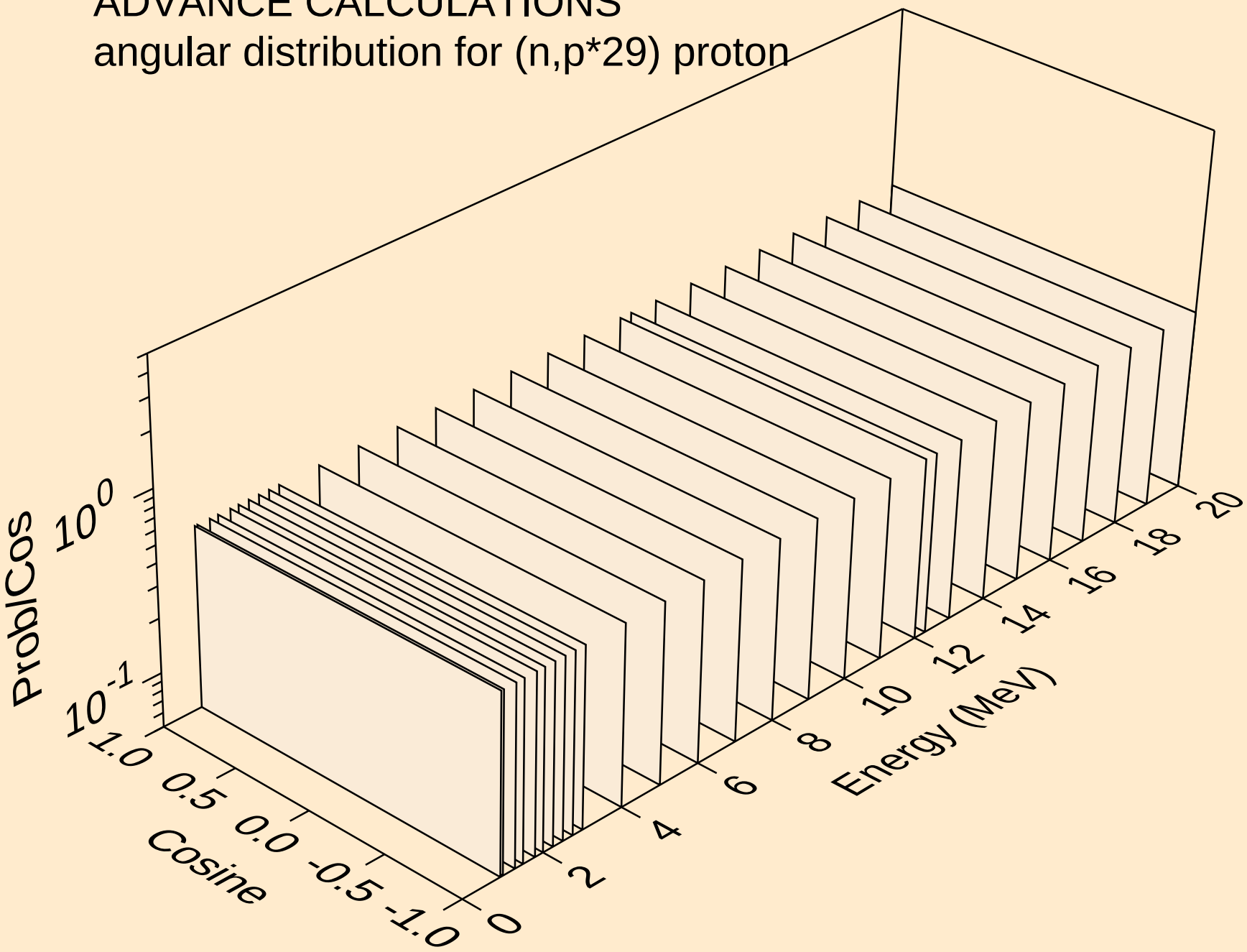
ADVANCE CALCULATIONS

angular distribution for (n,p*28) proton



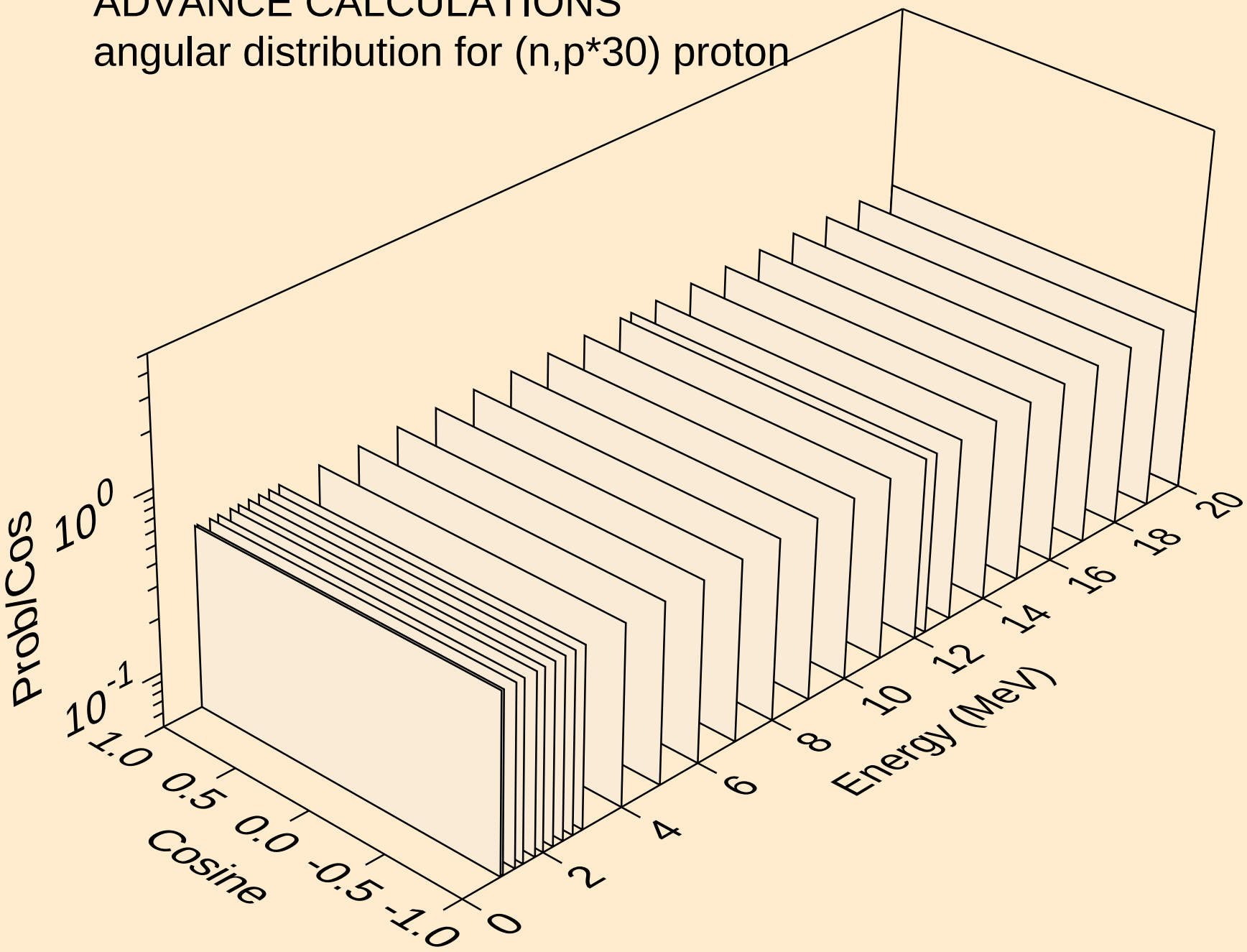
ADVANCE CALCULATIONS

angular distribution for (n,p*29) proton



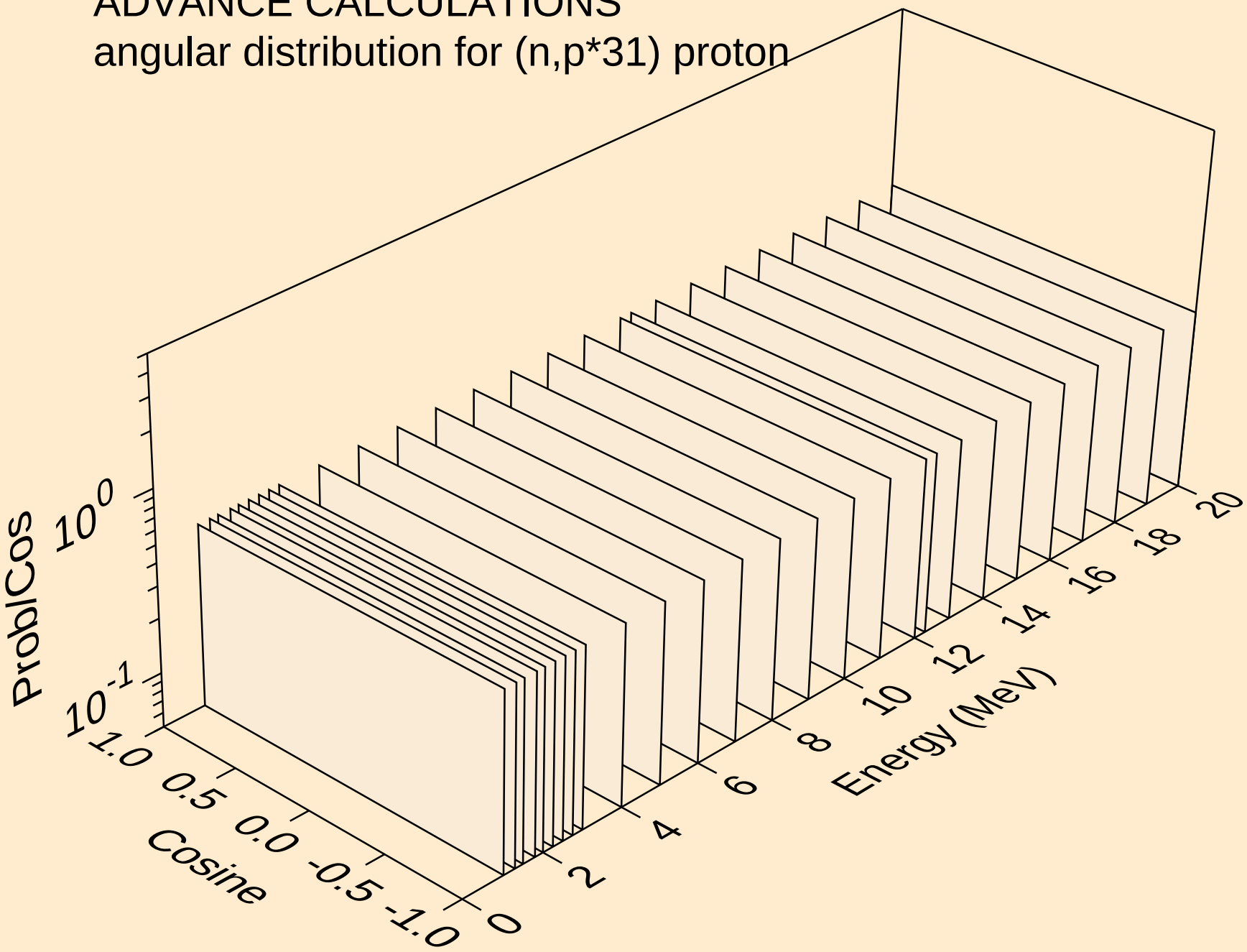
ADVANCE CALCULATIONS

angular distribution for (n,p*30) proton



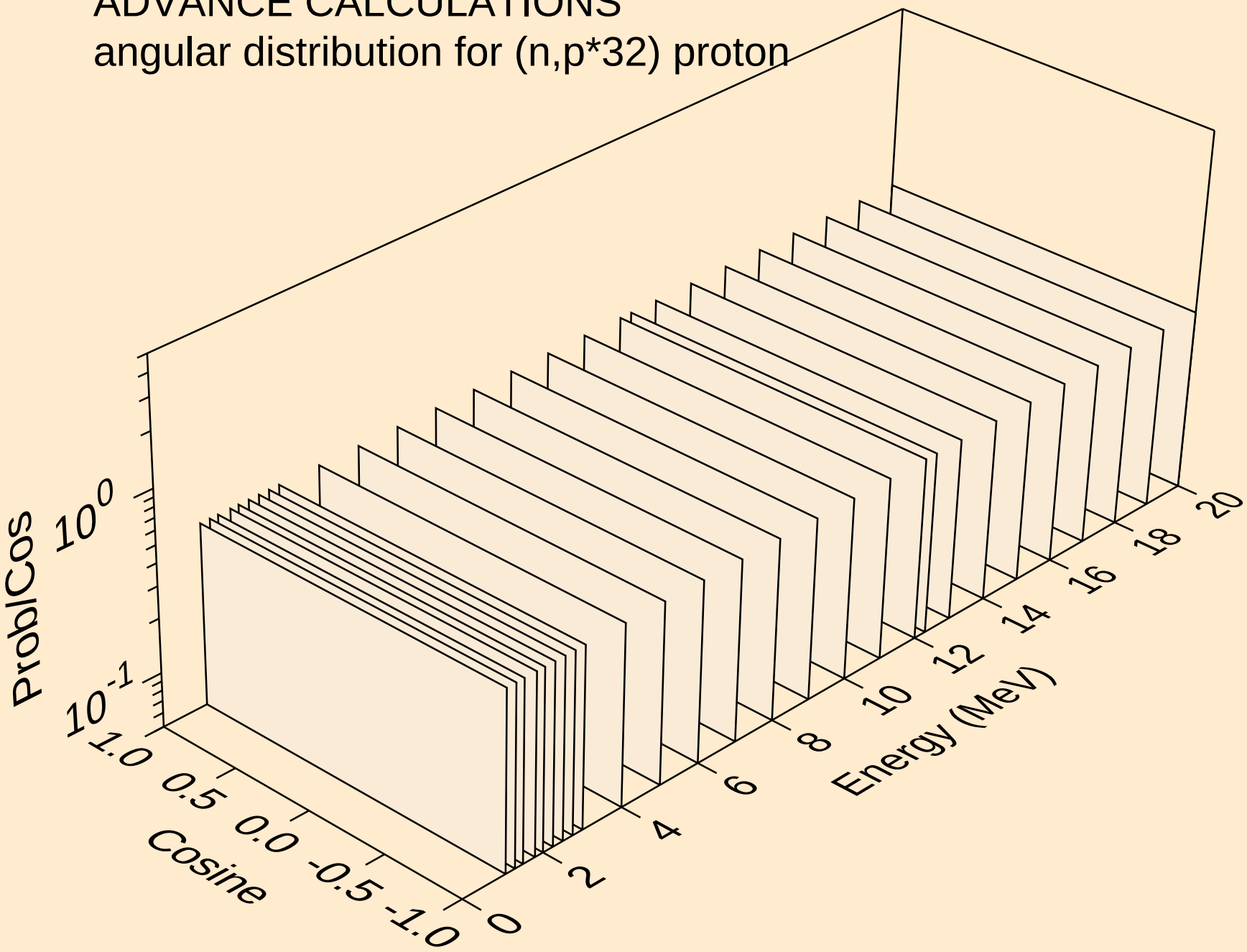
ADVANCE CALCULATIONS

angular distribution for (n,p*31) proton



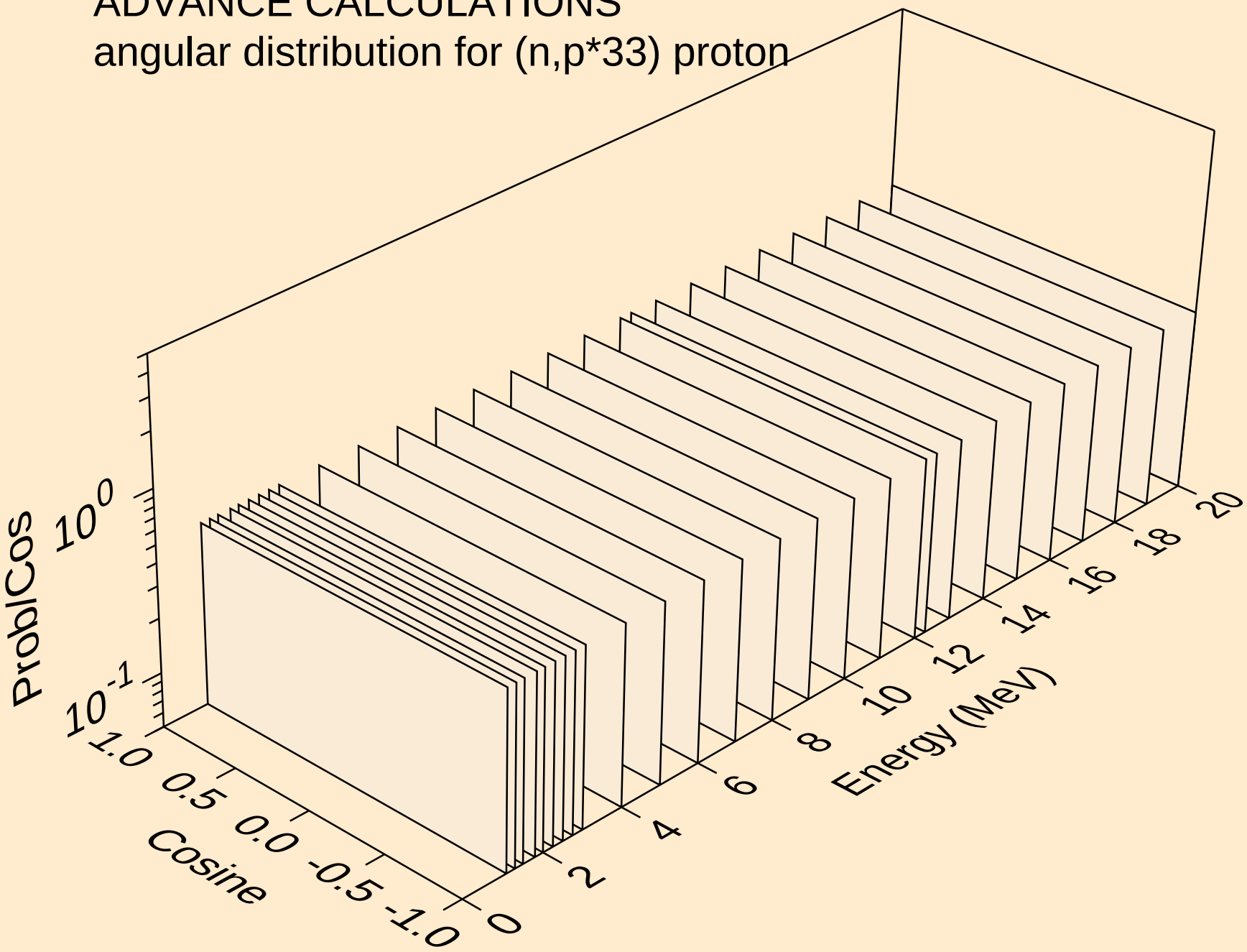
ADVANCE CALCULATIONS

angular distribution for (n,p*32) proton



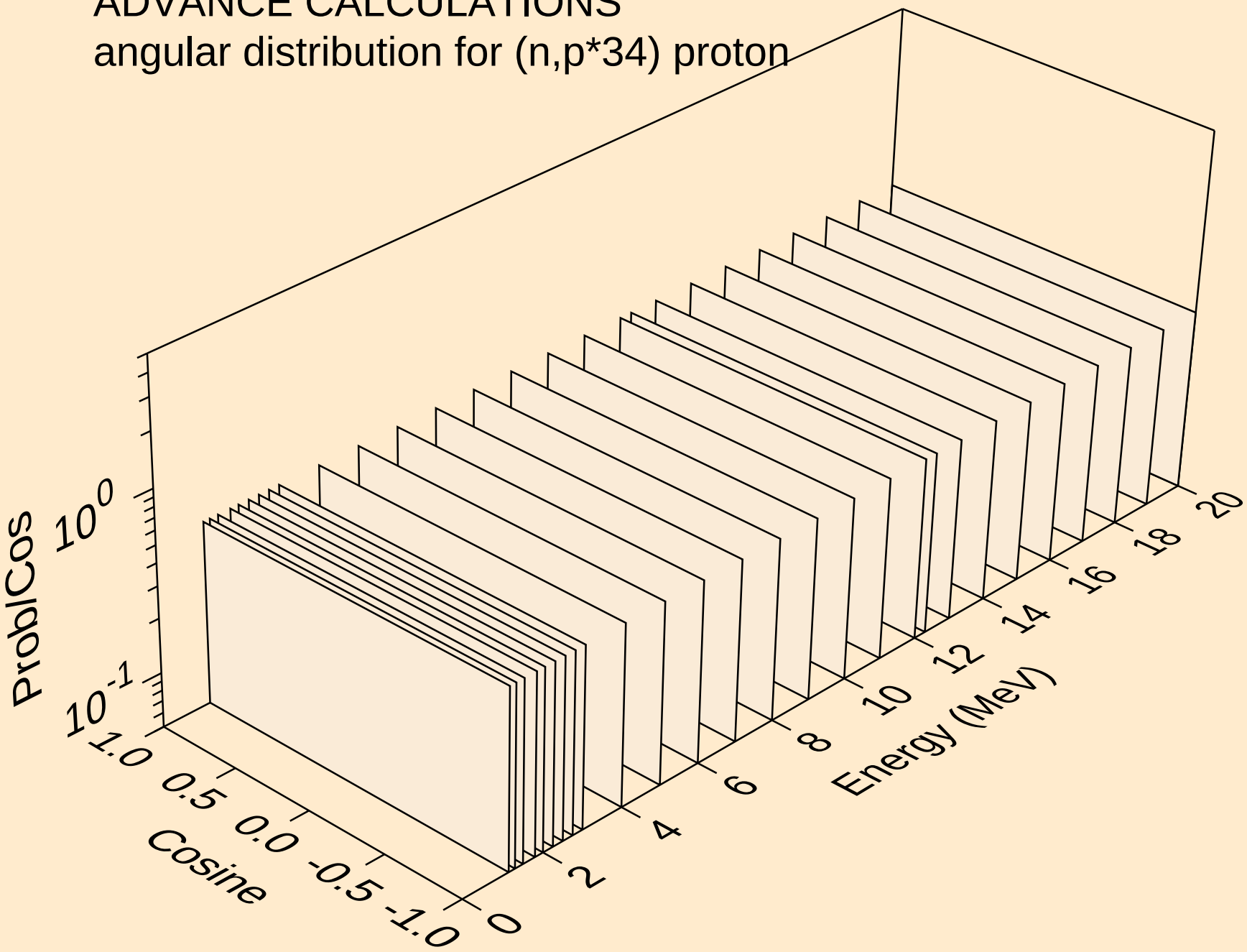
ADVANCE CALCULATIONS

angular distribution for (n,p*33) proton



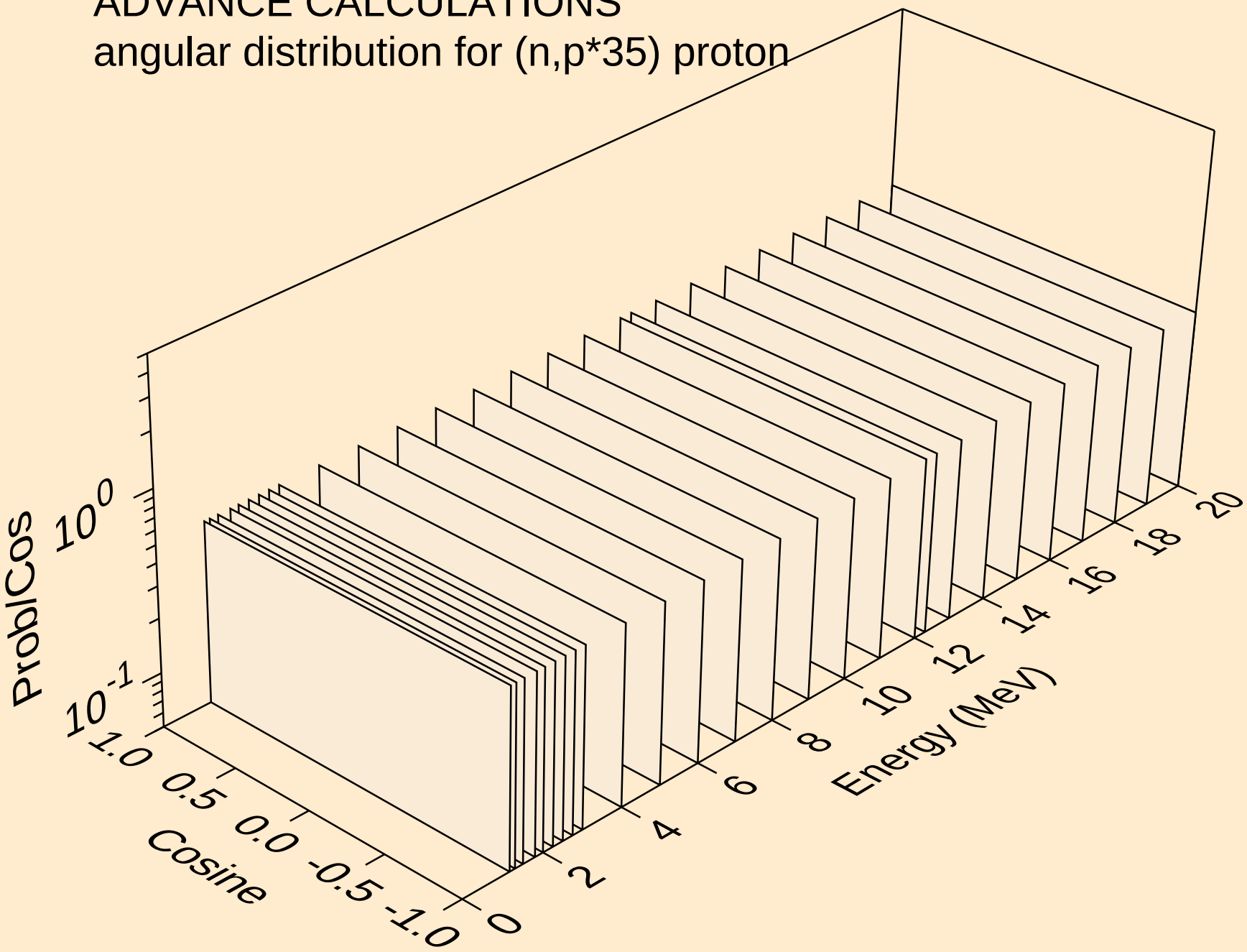
ADVANCE CALCULATIONS

angular distribution for (n,p*34) proton



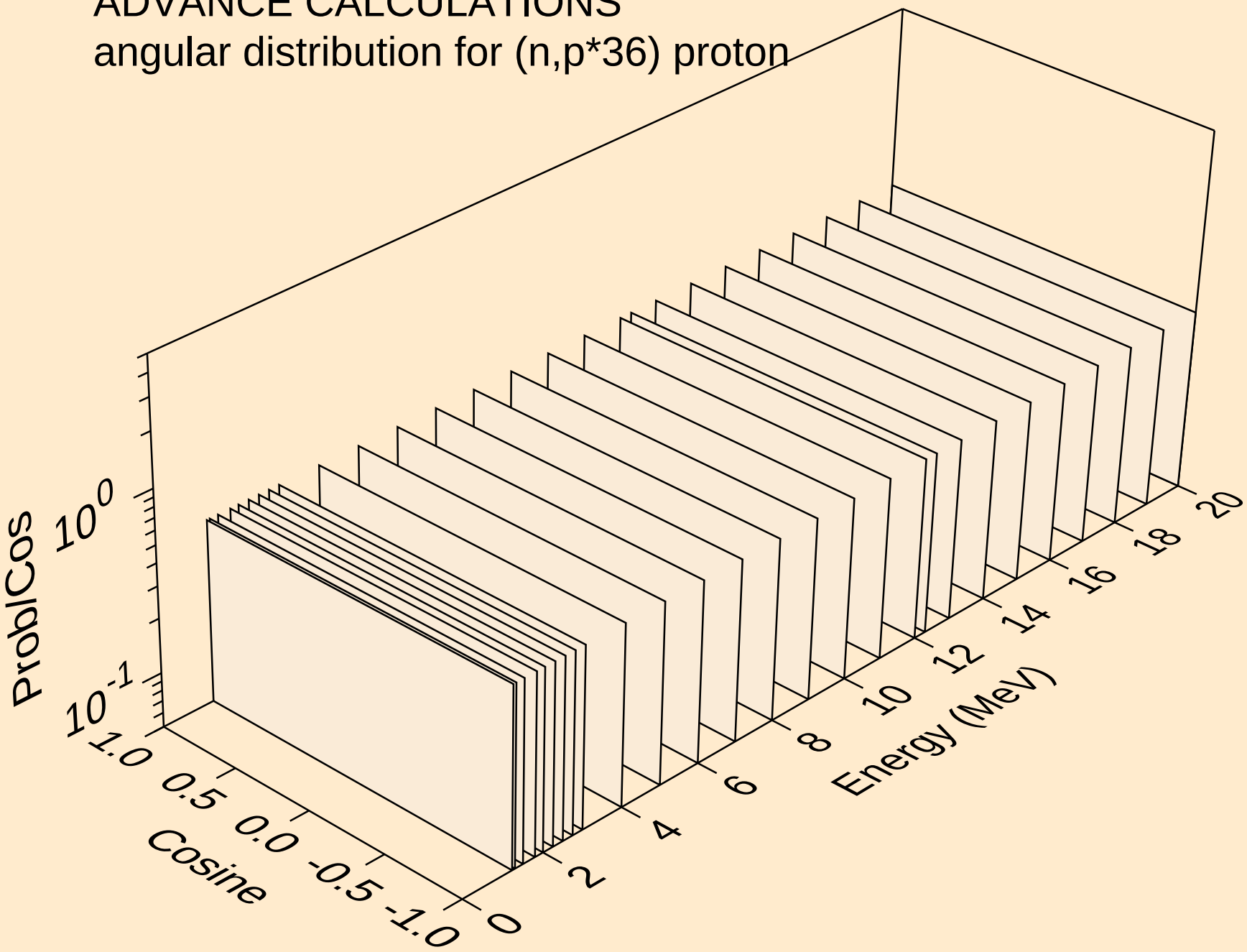
ADVANCE CALCULATIONS

angular distribution for (n,p*35) proton



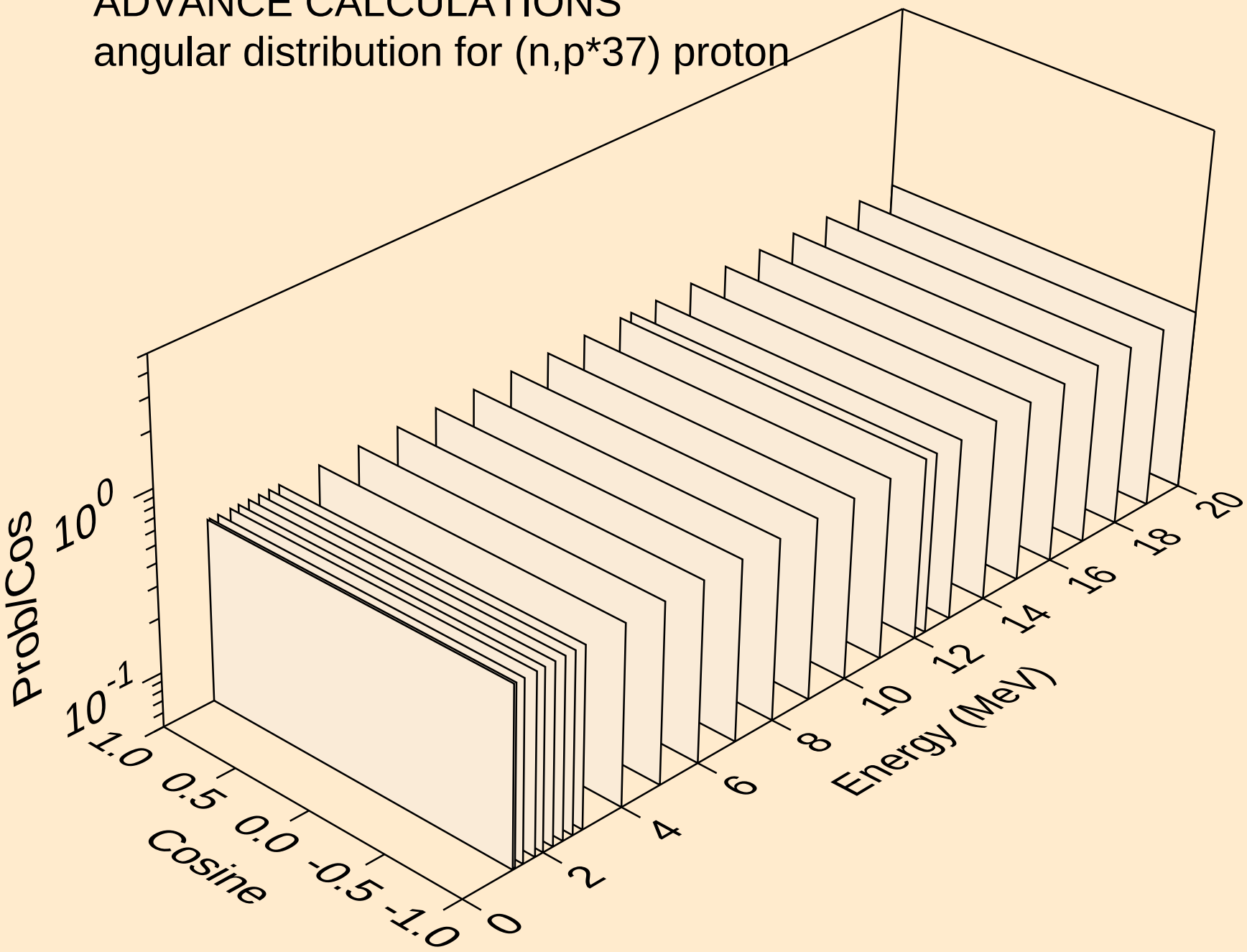
ADVANCE CALCULATIONS

angular distribution for (n,p*36) proton



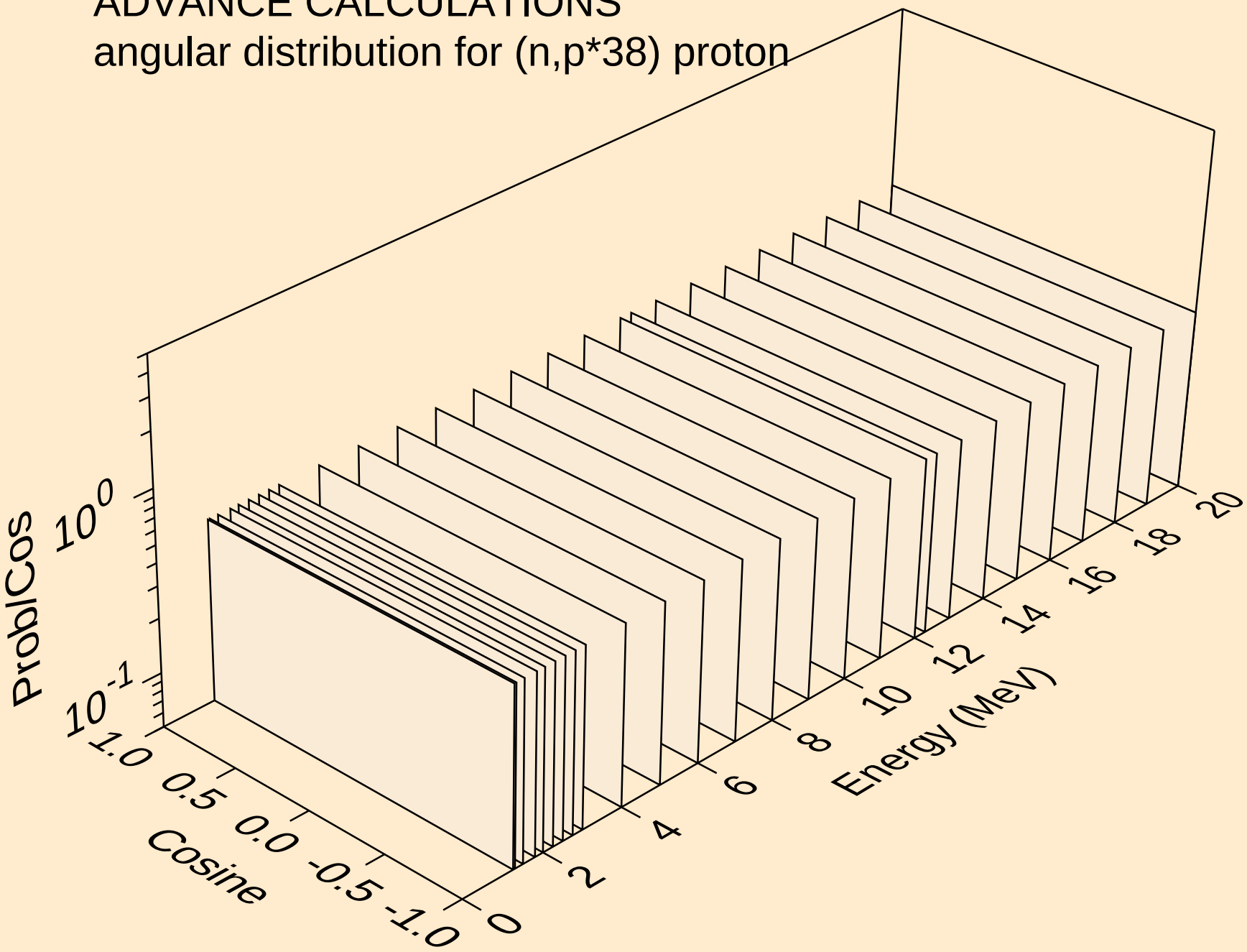
ADVANCE CALCULATIONS

angular distribution for (n,p*37) proton

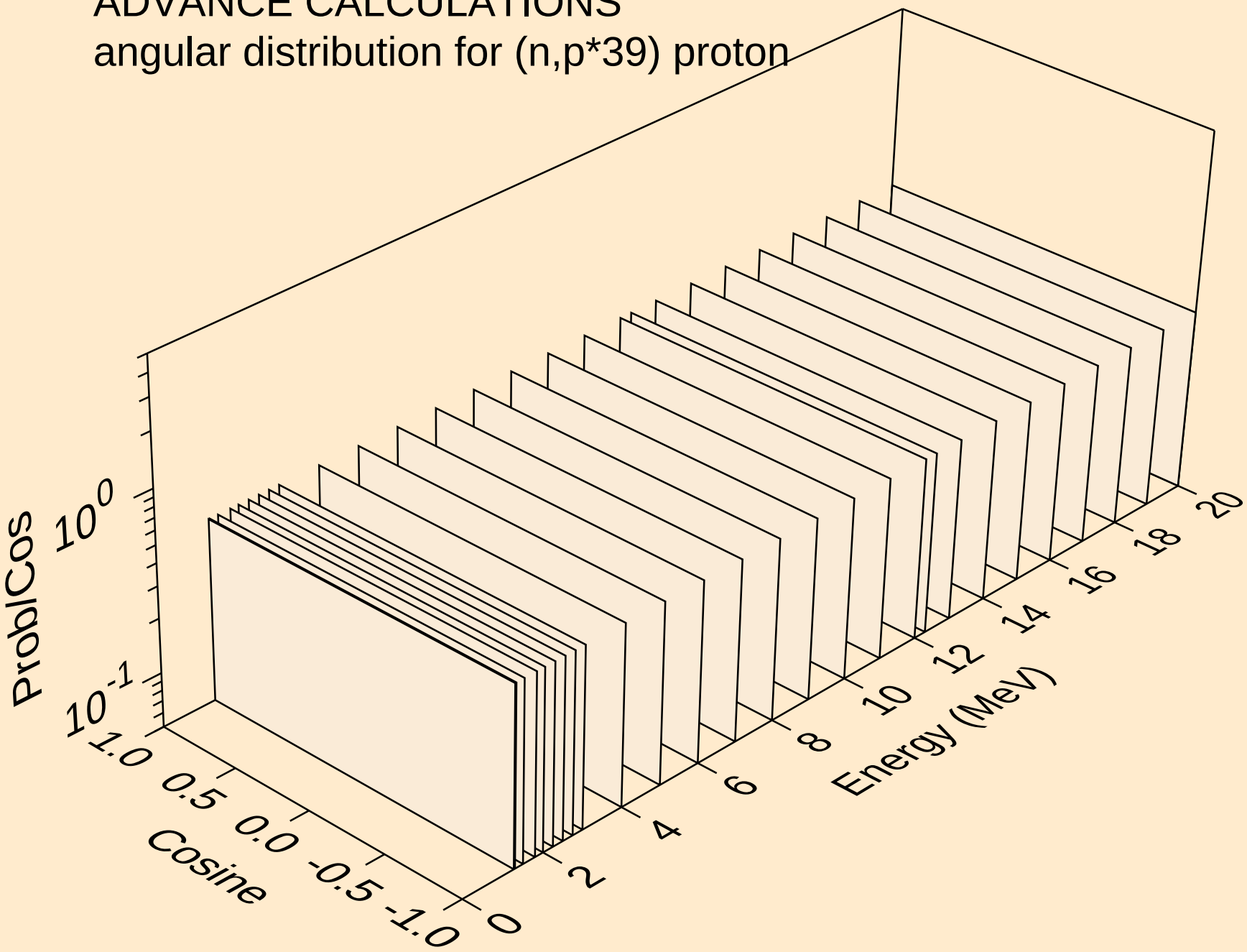


ADVANCE CALCULATIONS

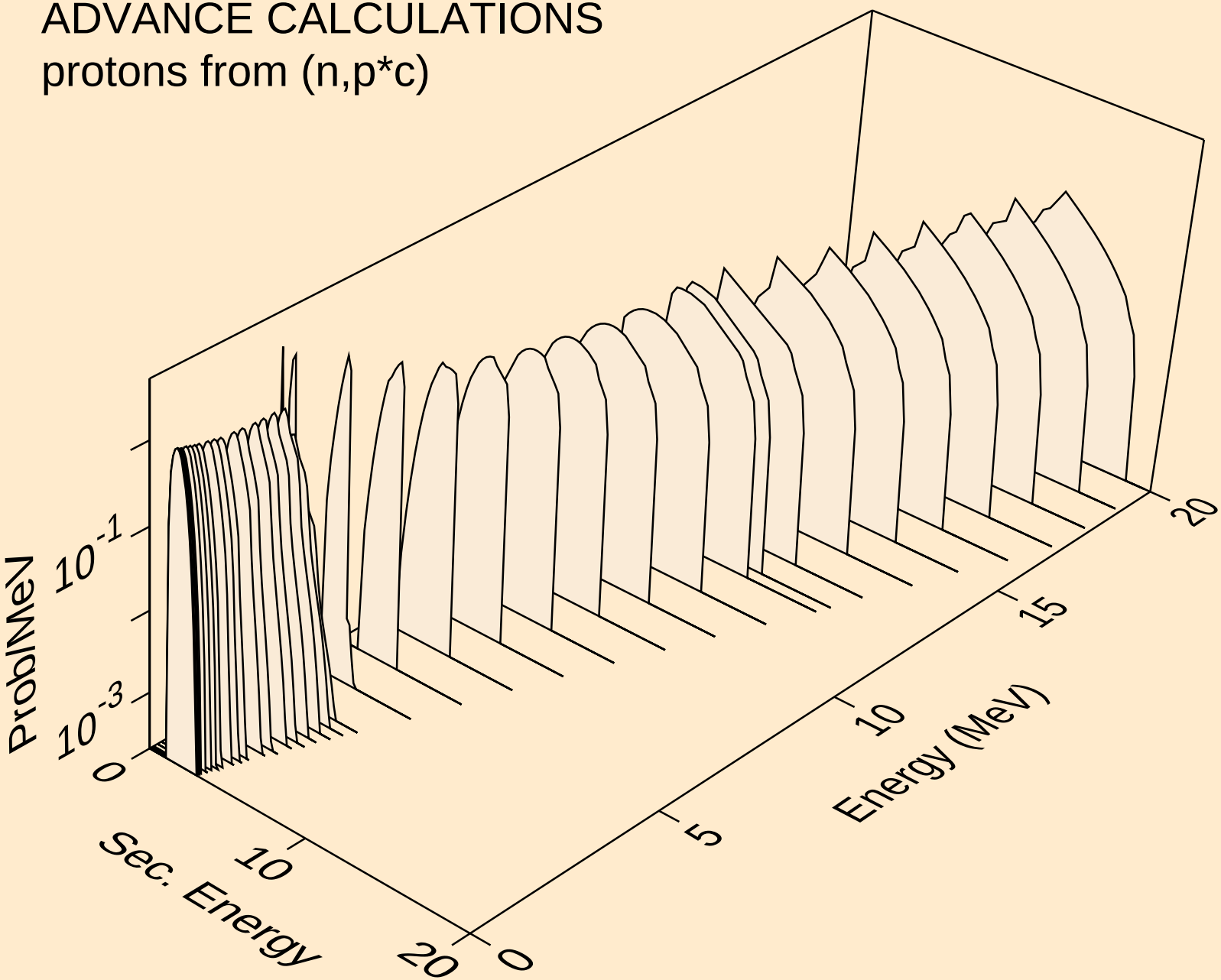
angular distribution for (n,p*38) proton



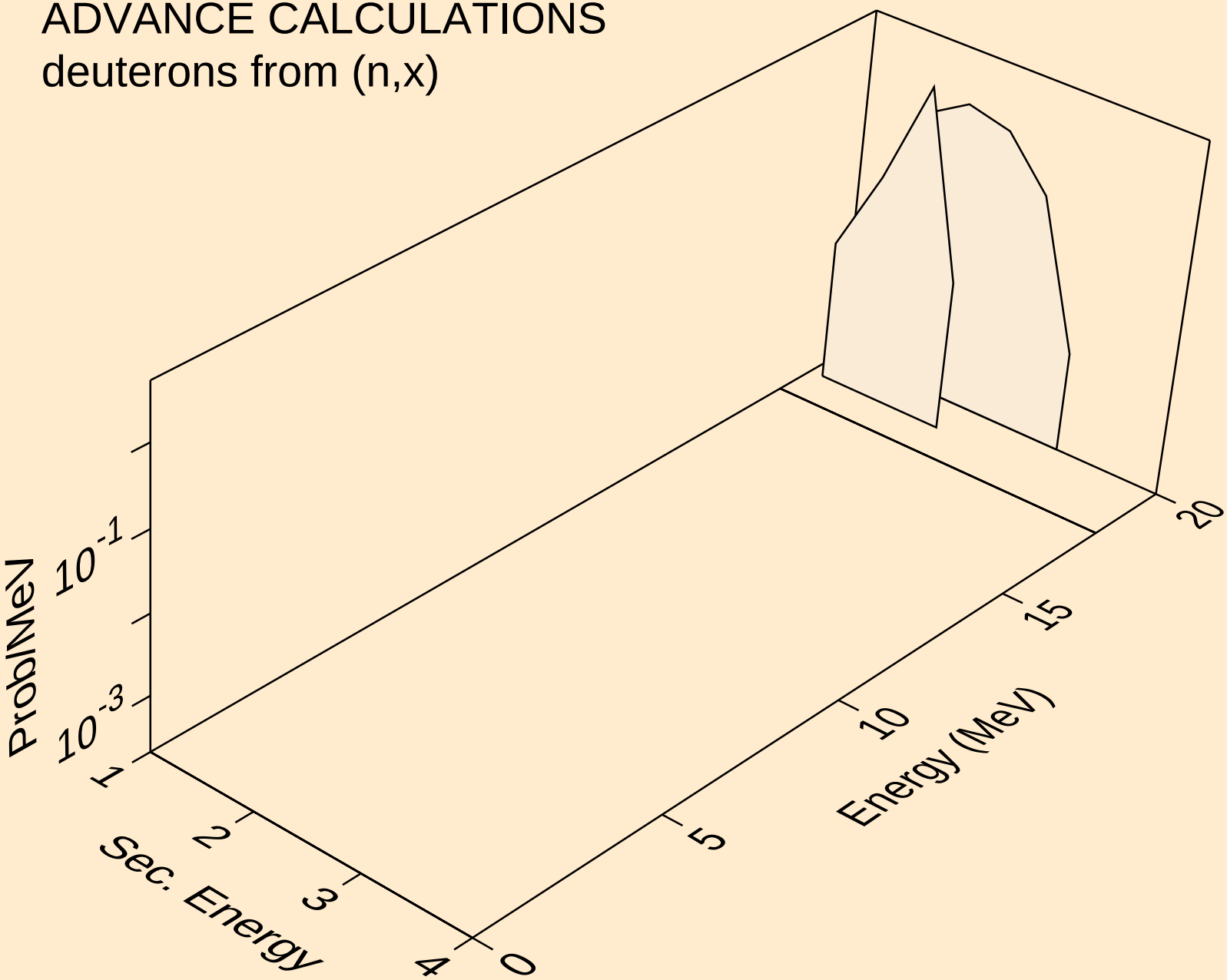
ADVANCE CALCULATIONS
angular distribution for (n,p*39) proton



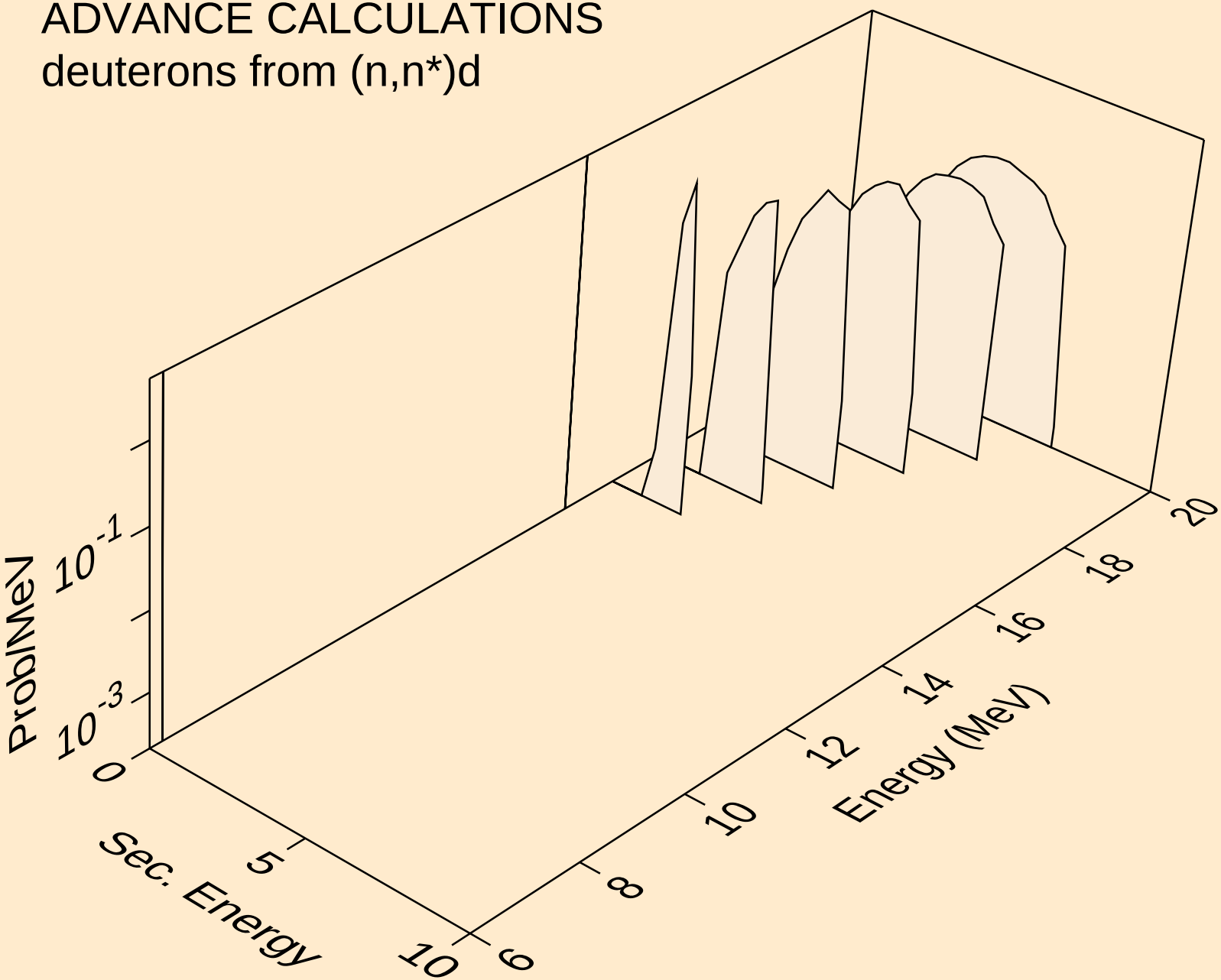
ADVANCE CALCULATIONS
protons from (n,p*c)



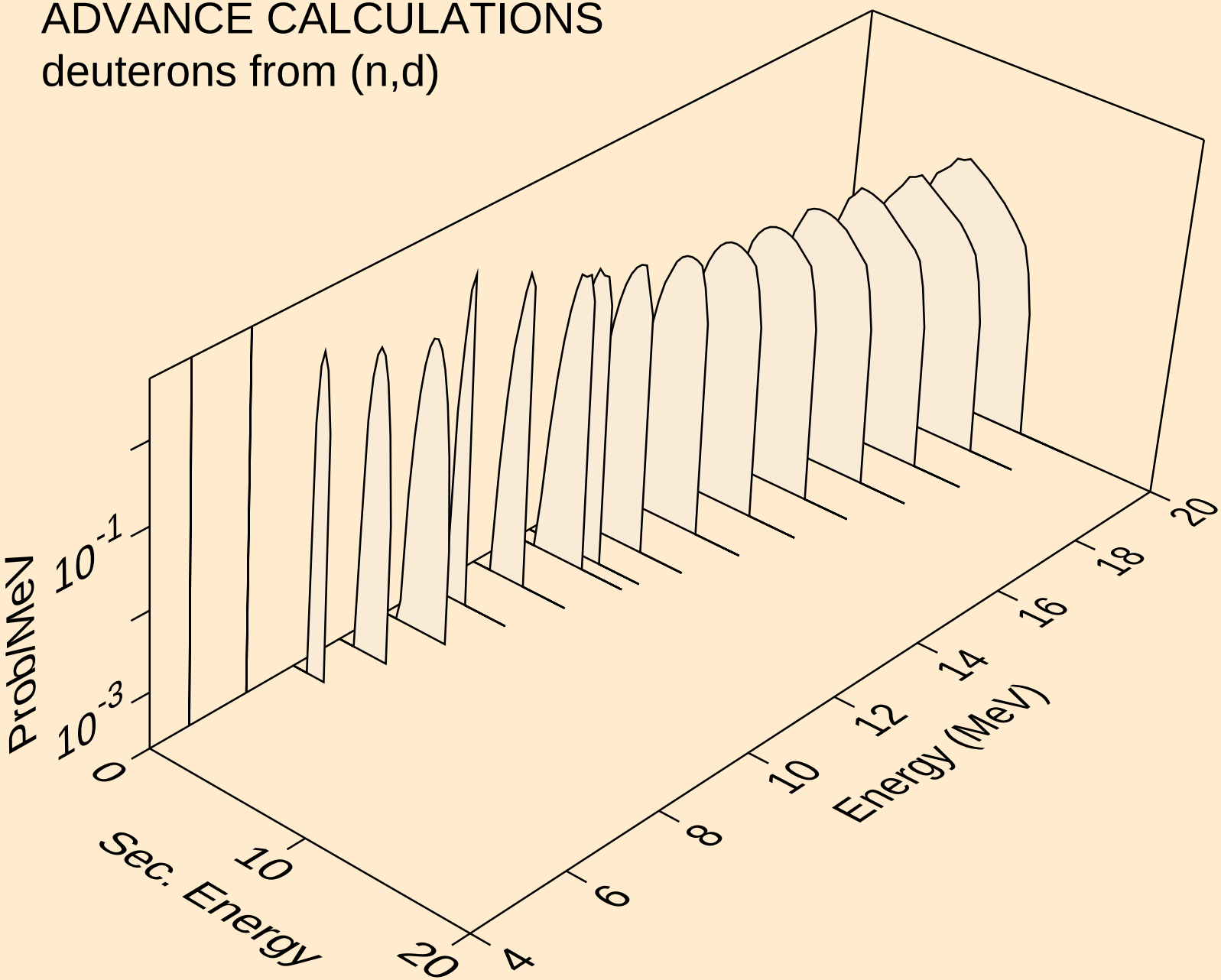
ADVANCE CALCULATIONS
deuterons from (n,x)



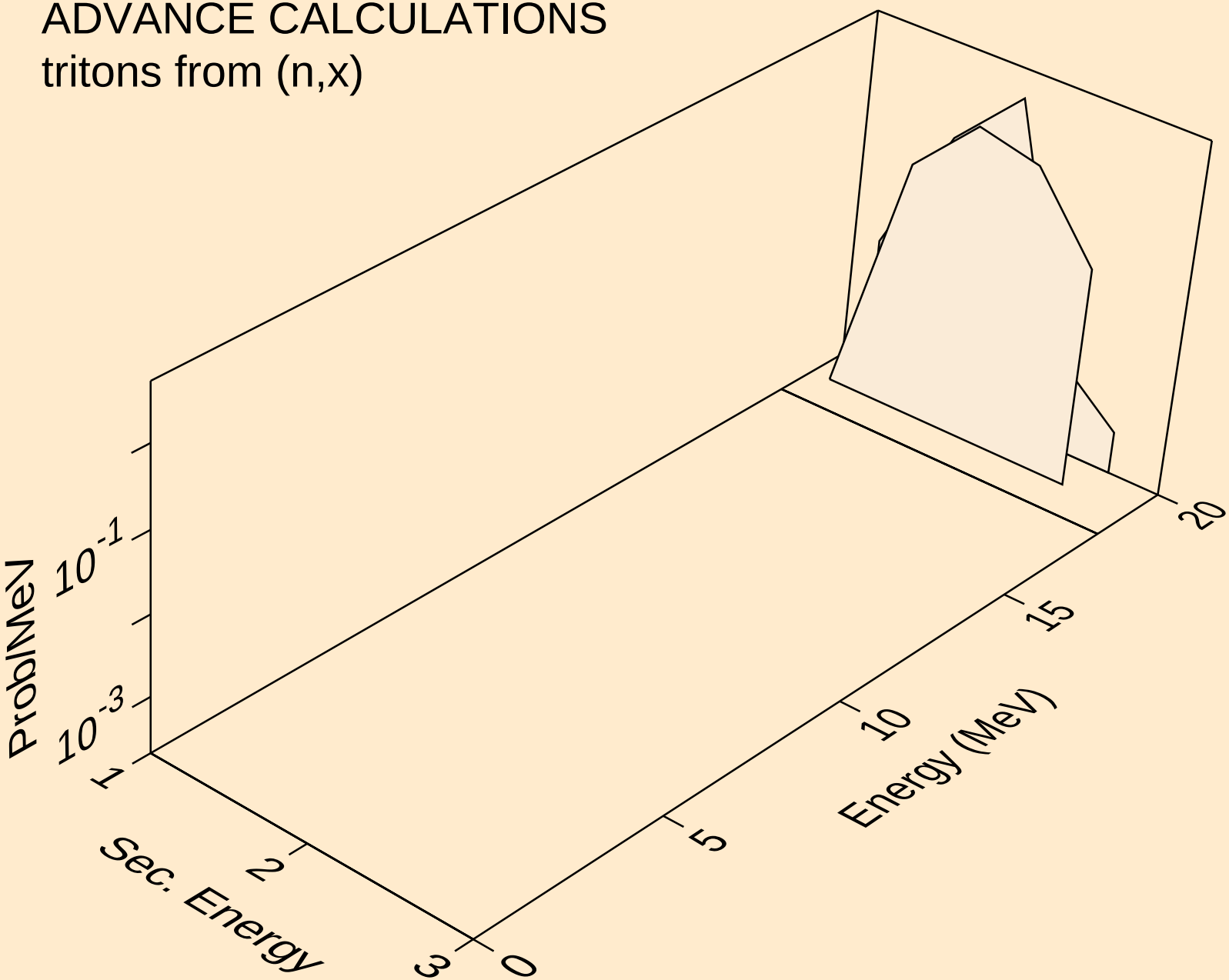
ADVANCE CALCULATIONS
deuterons from (n,n*)d



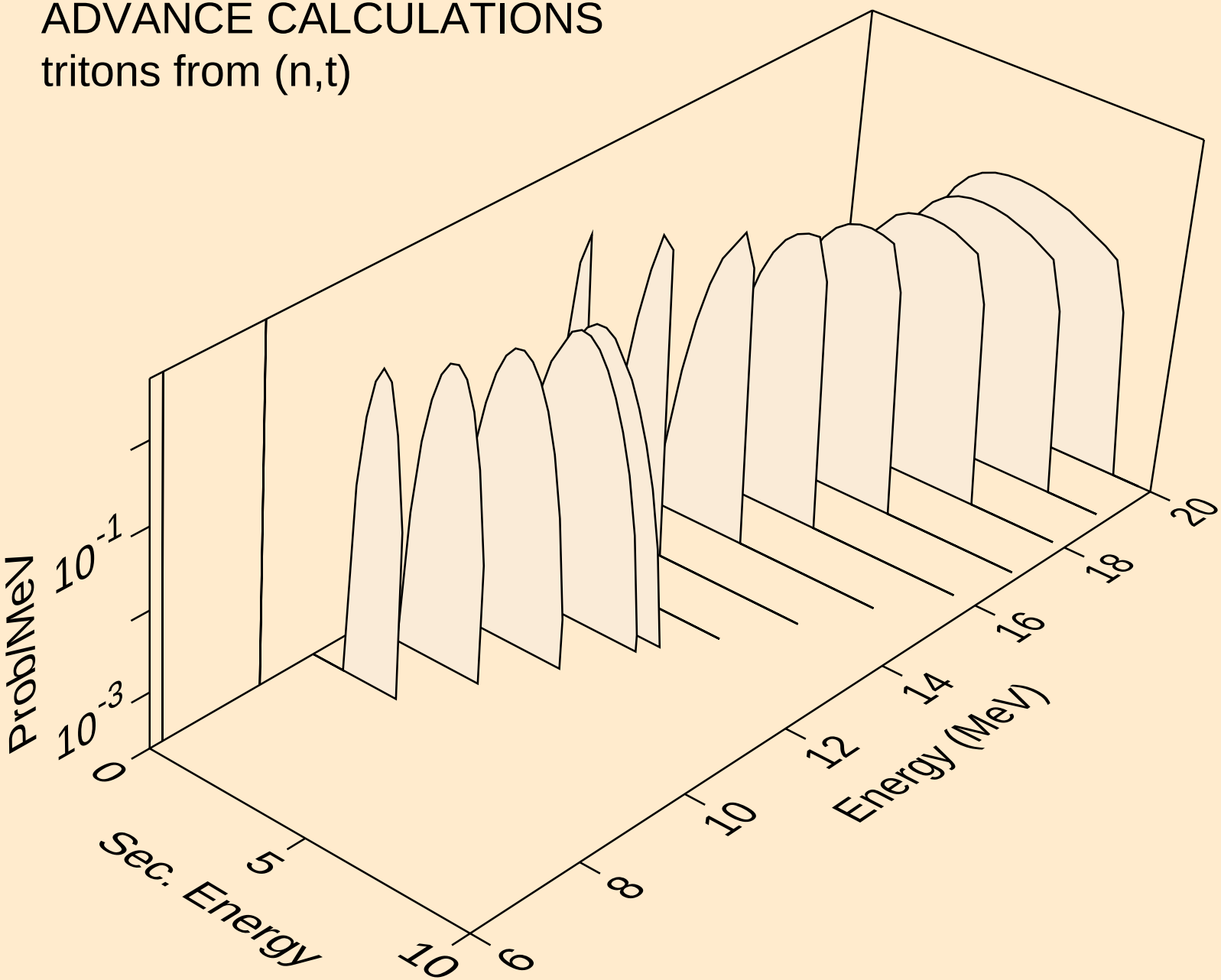
ADVANCE CALCULATIONS
deuterons from (n,d)



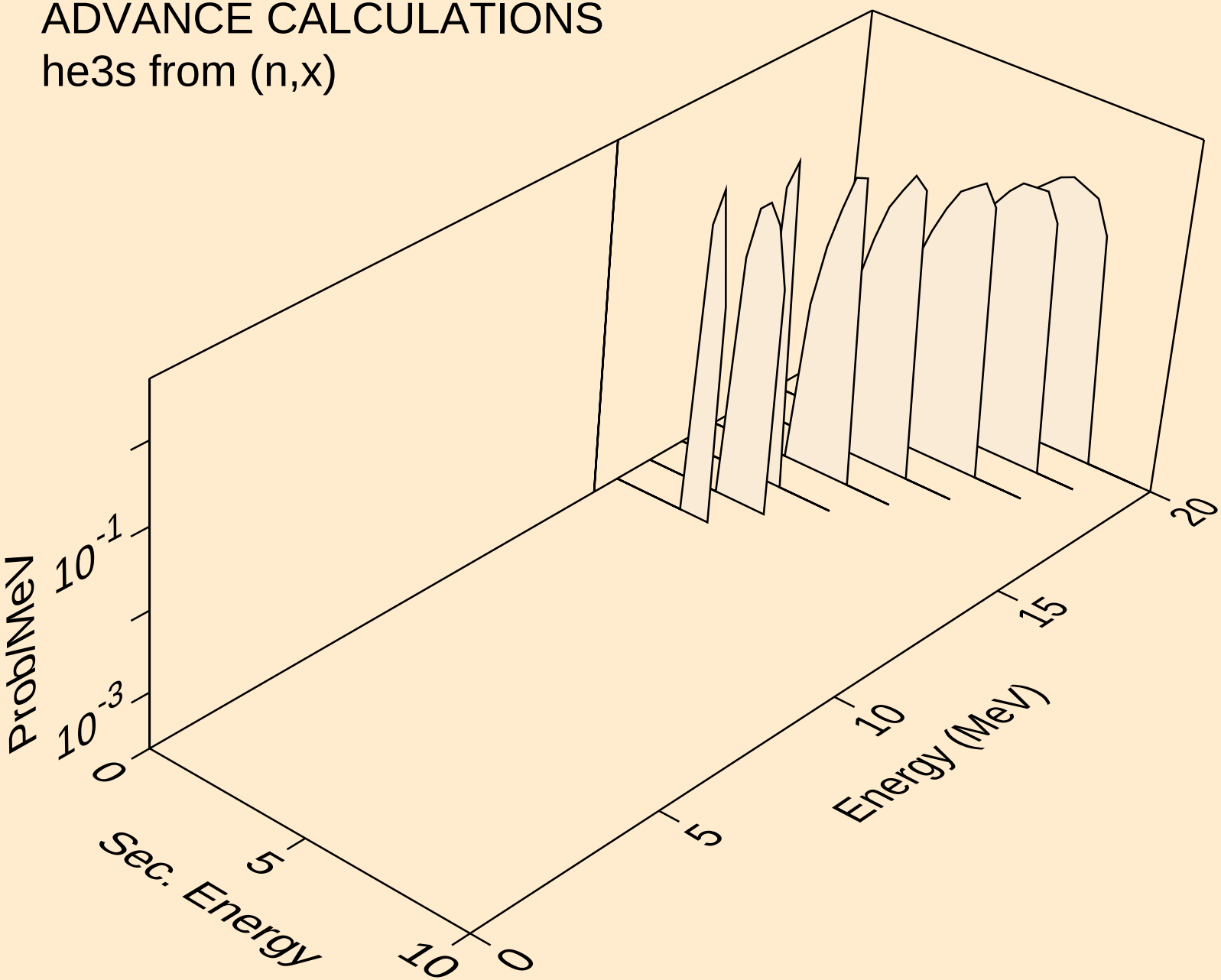
ADVANCE CALCULATIONS
tritons from (n,x)



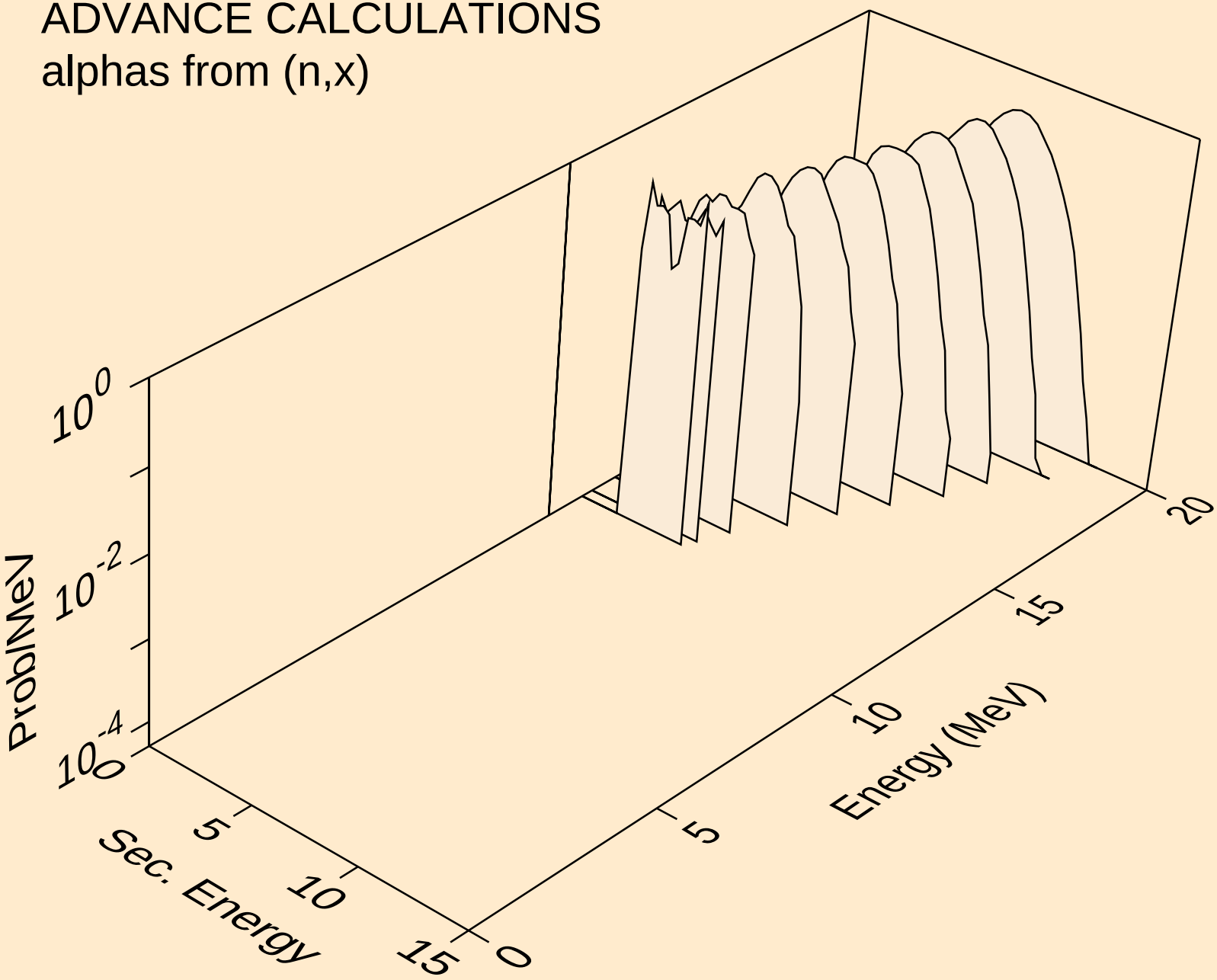
ADVANCE CALCULATIONS
tritons from (n,t)



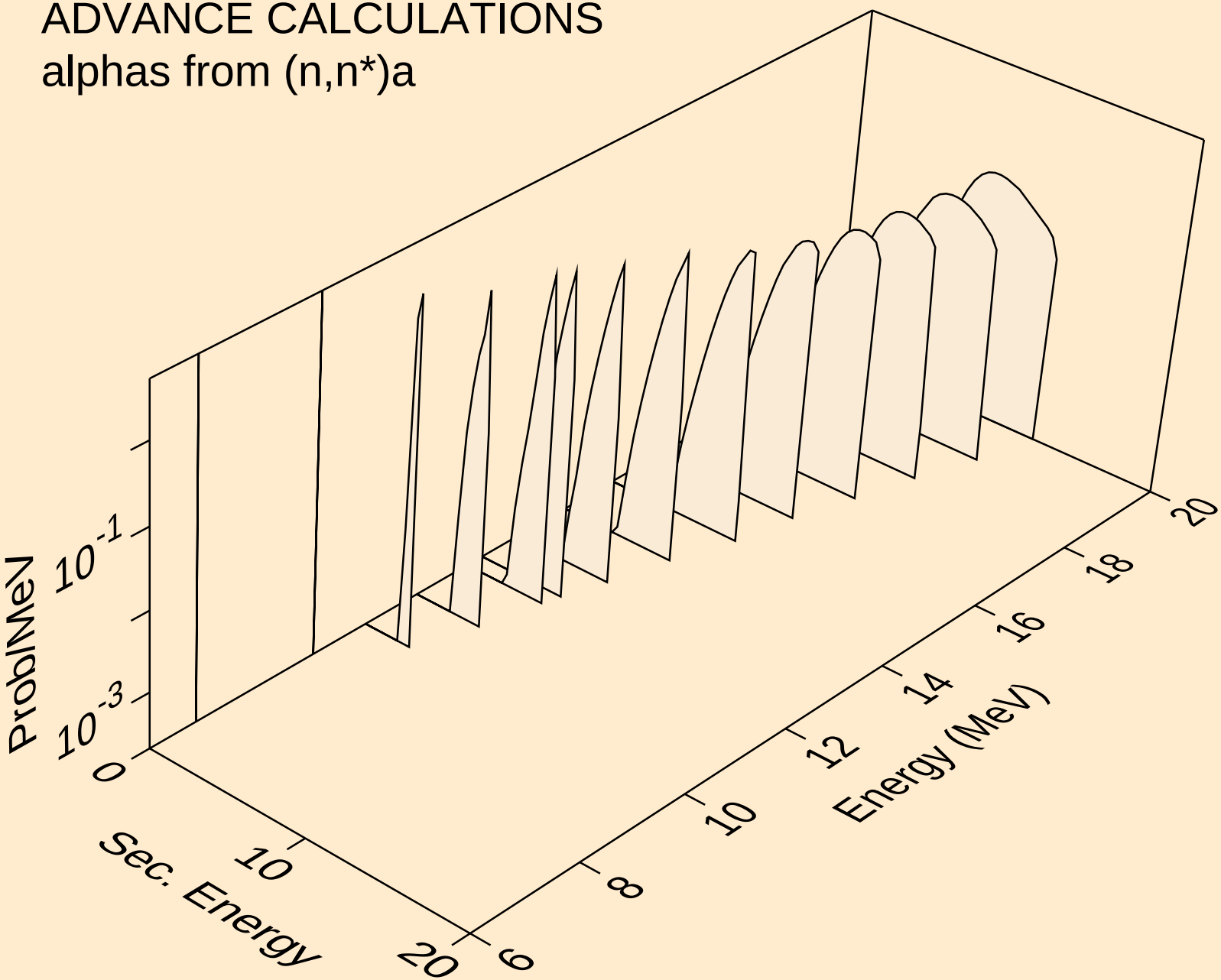
ADVANCE CALCULATIONS
he3s from (n,x)



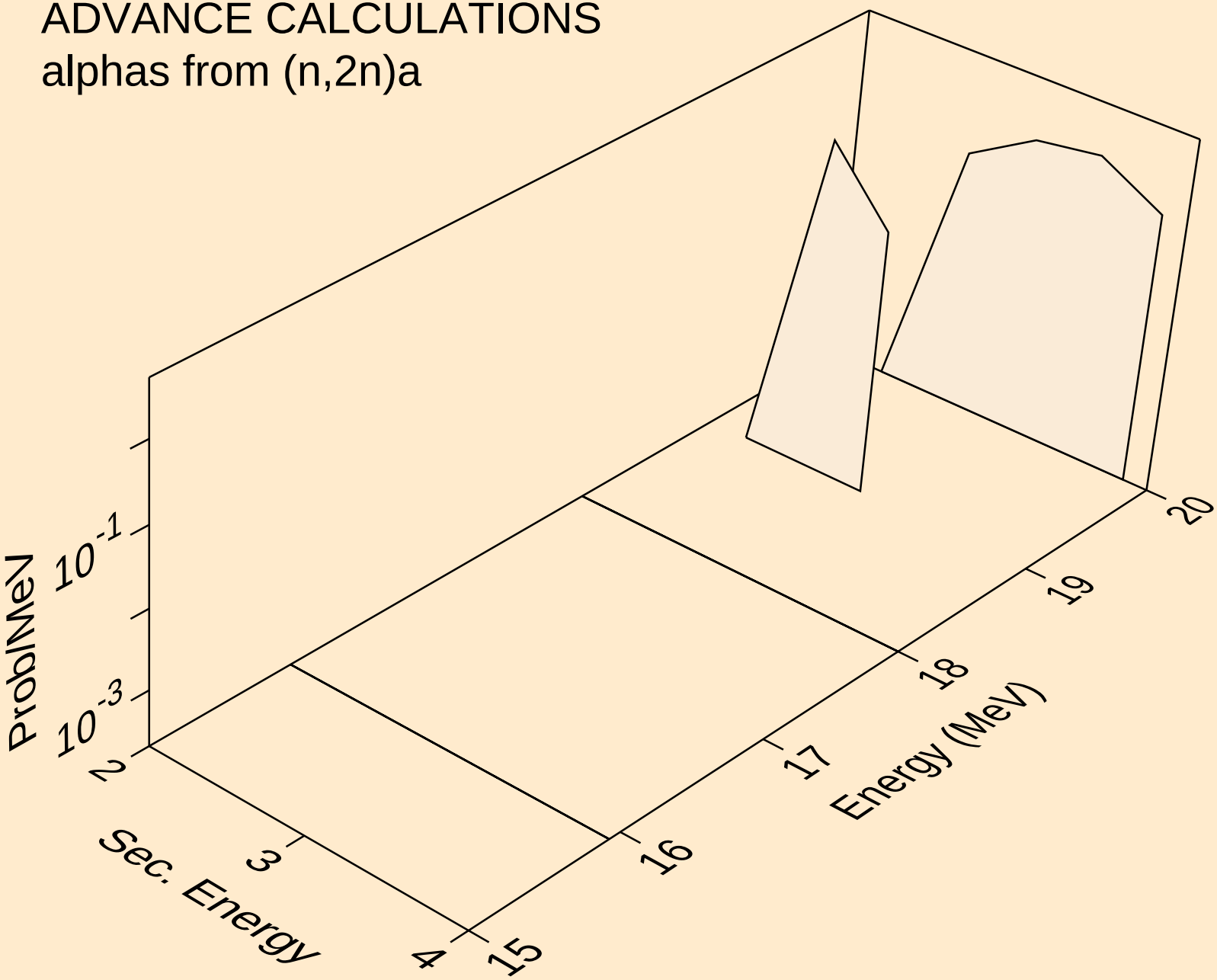
ADVANCE CALCULATIONS
alphas from (n,x)



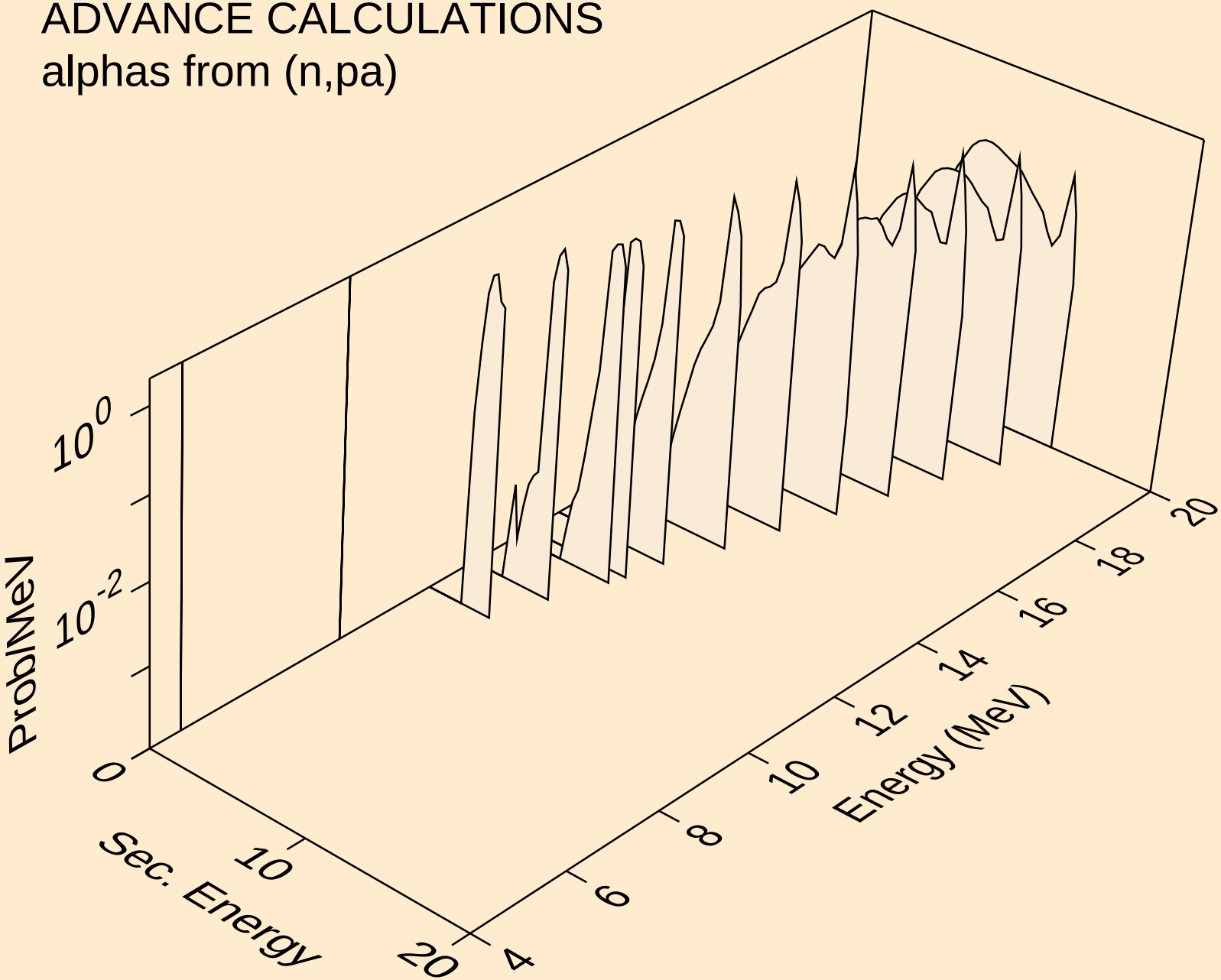
ADVANCE CALCULATIONS
alphas from (n,n*)a



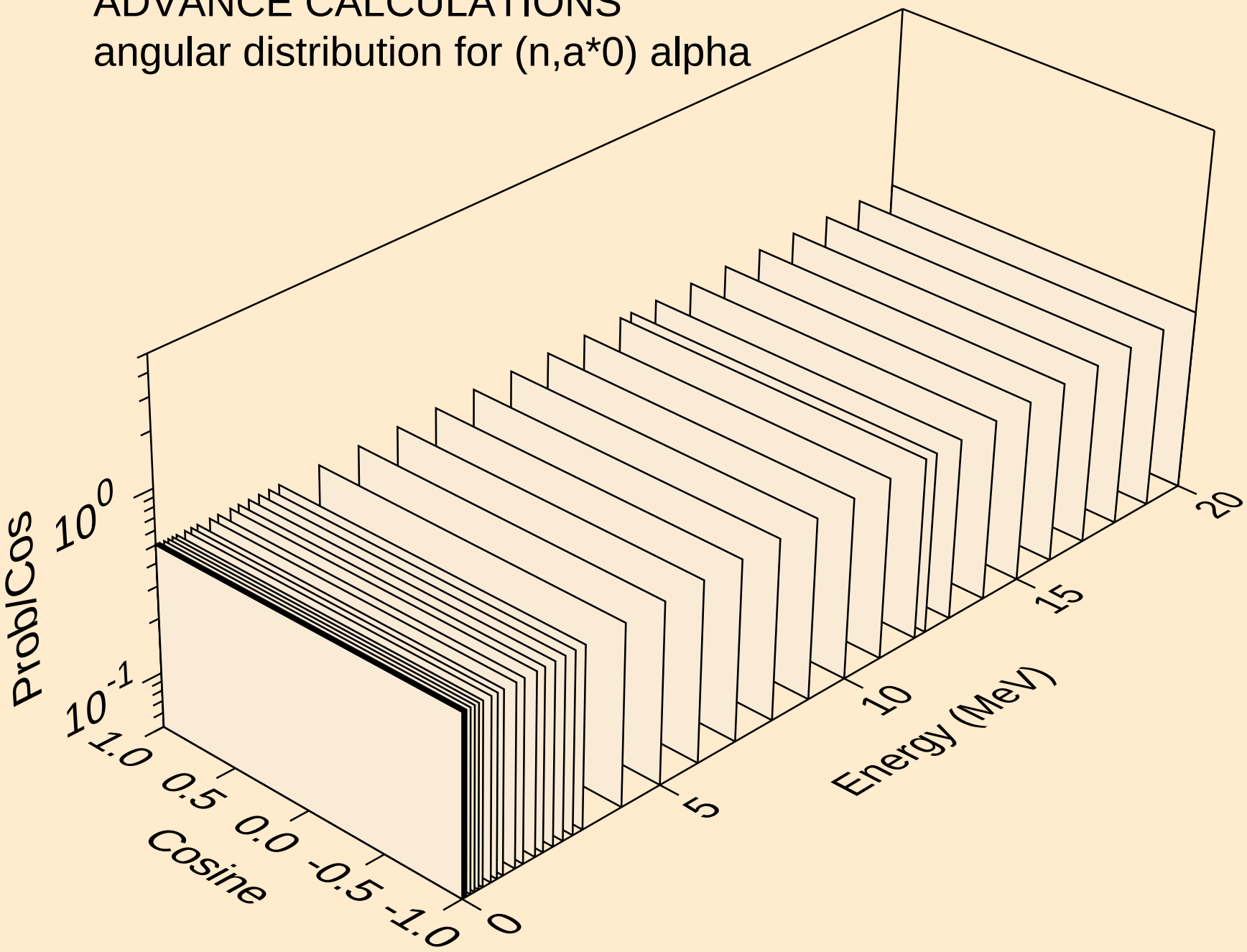
ADVANCE CALCULATIONS
alphas from (n,2n)a



ADVANCE CALCULATIONS
alphas from (n,pa)

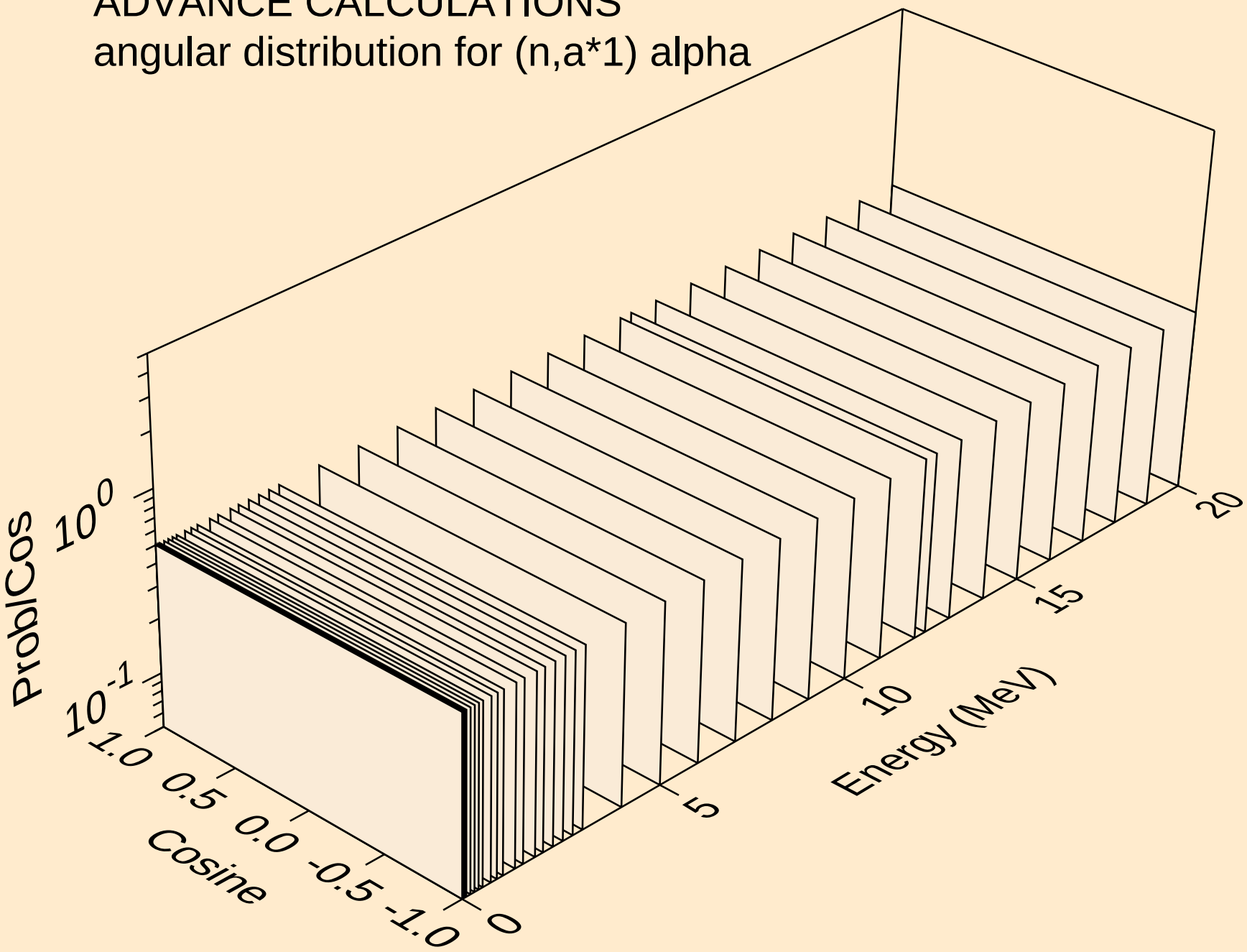


ADVANCE CALCULATIONS
angular distribution for (n,a*0) alpha



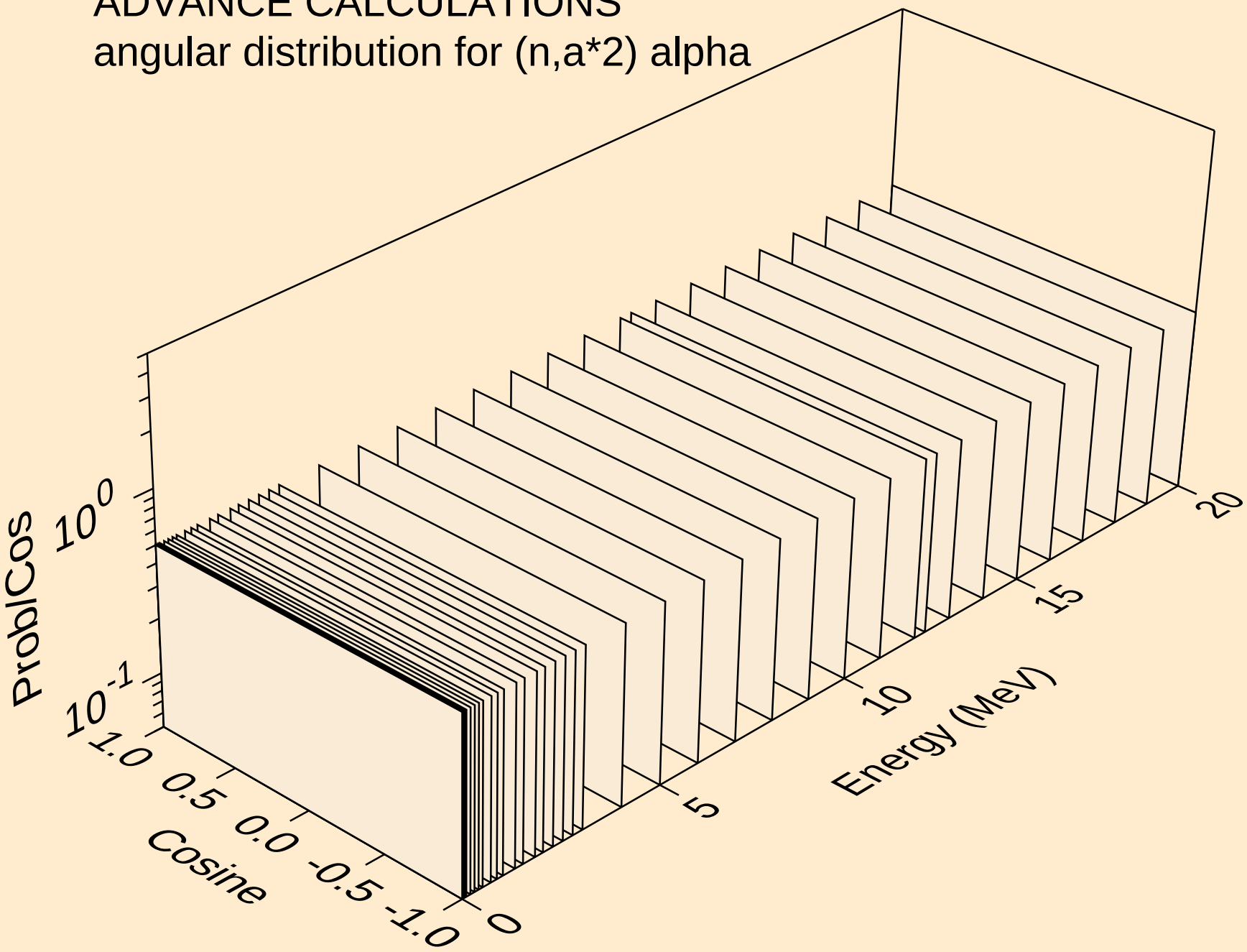
ADVANCE CALCULATIONS

angular distribution for (n,a*1) alpha



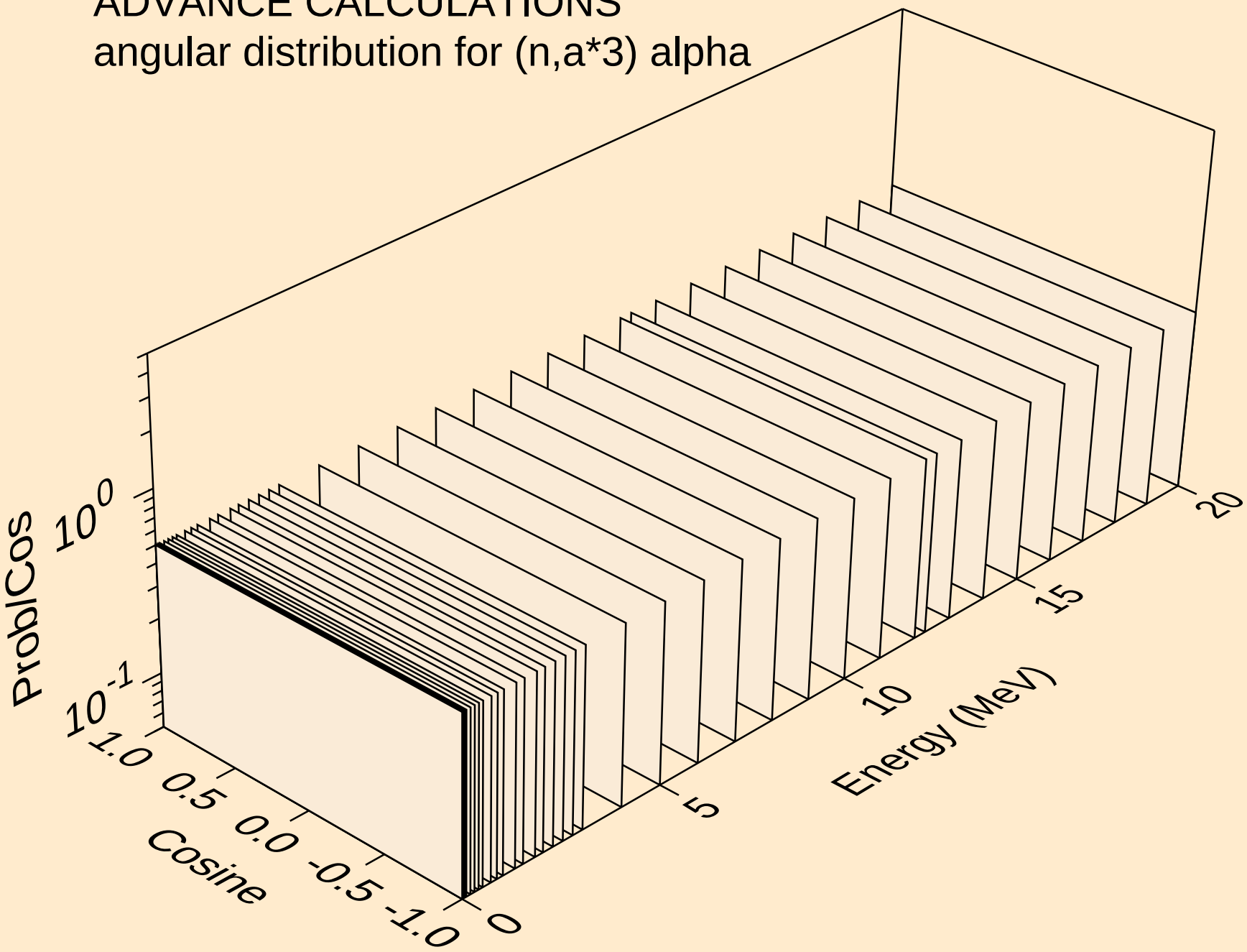
ADVANCE CALCULATIONS

angular distribution for (n,a*2) alpha



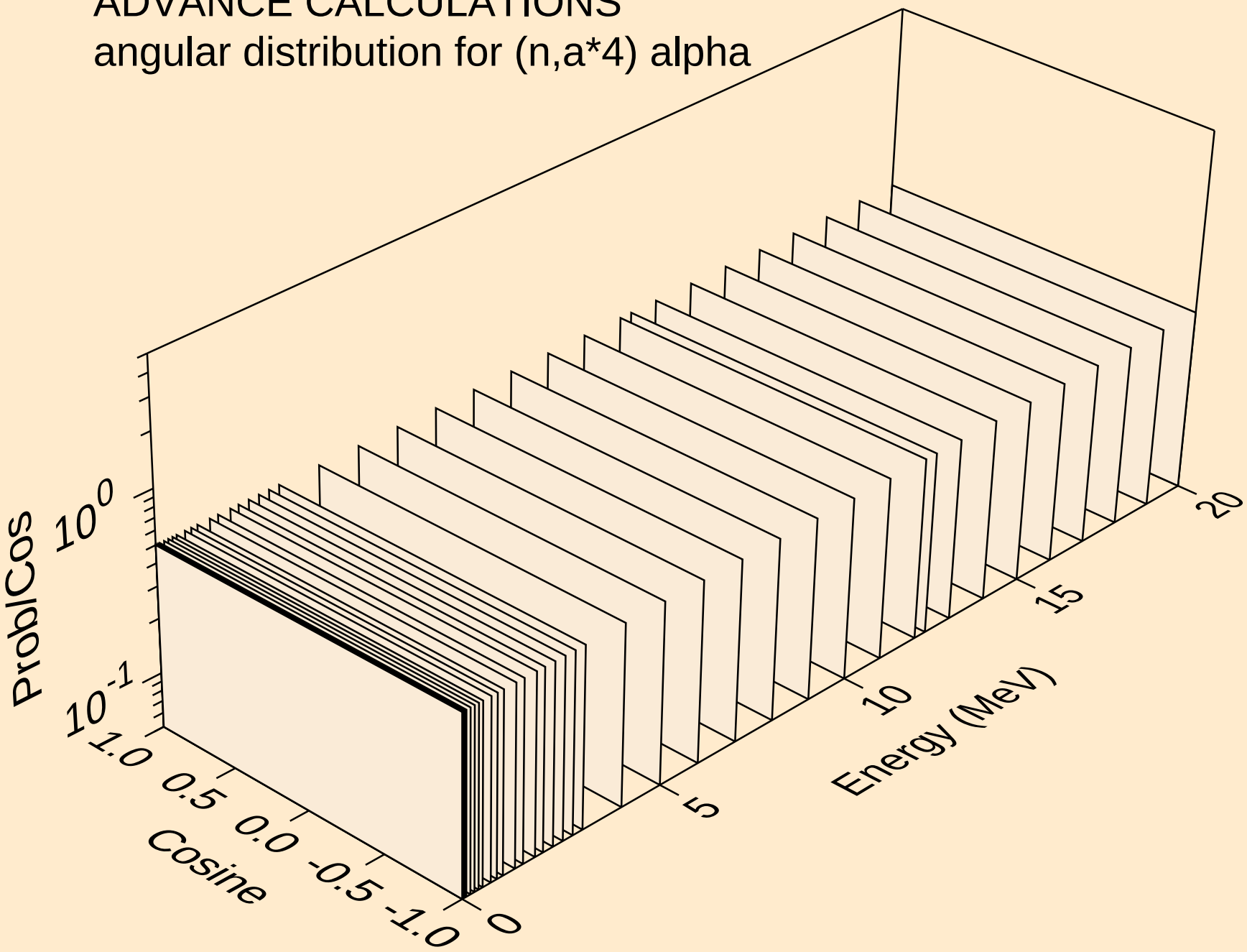
ADVANCE CALCULATIONS

angular distribution for (n,a*3) alpha



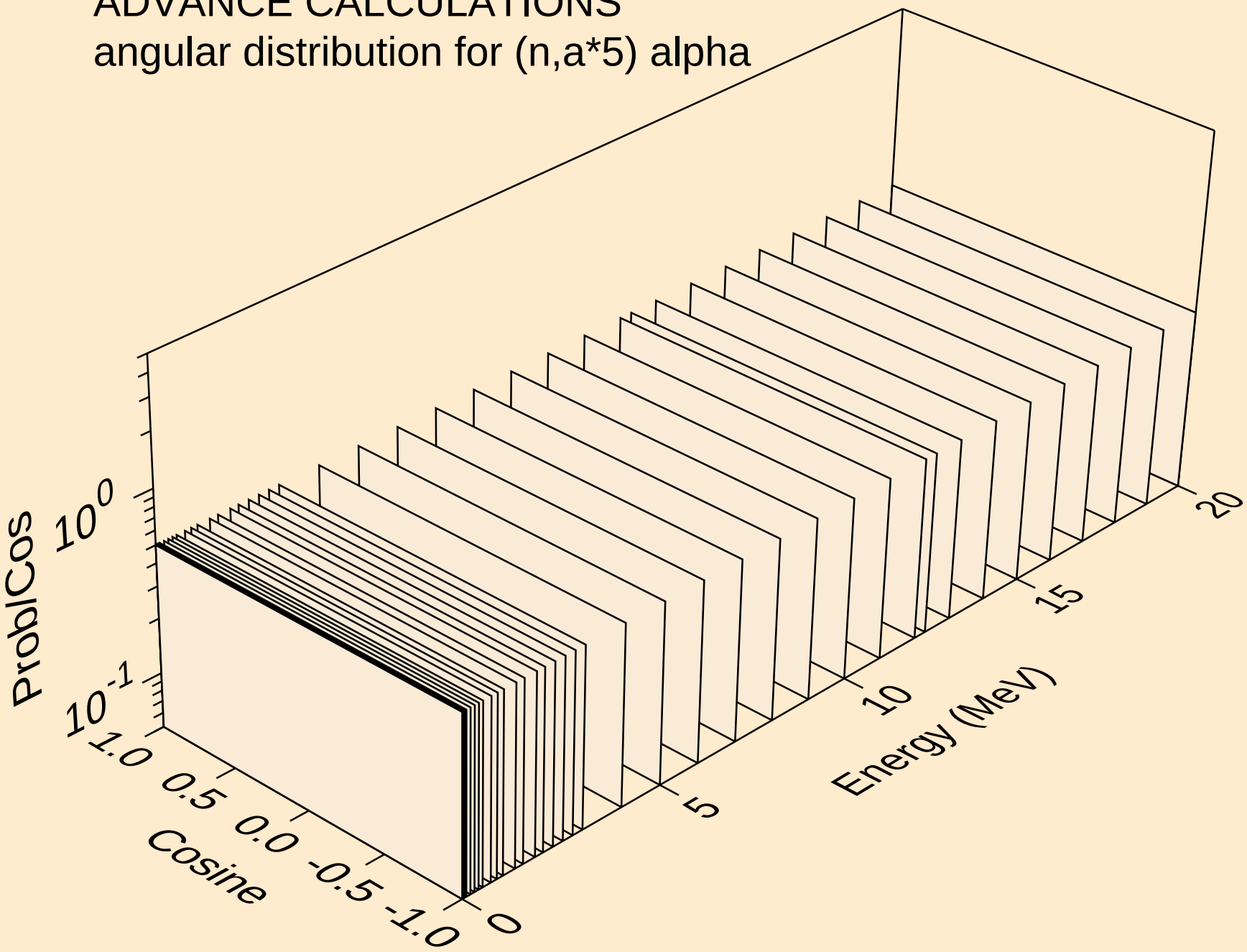
ADVANCE CALCULATIONS

angular distribution for (n,a*4) alpha



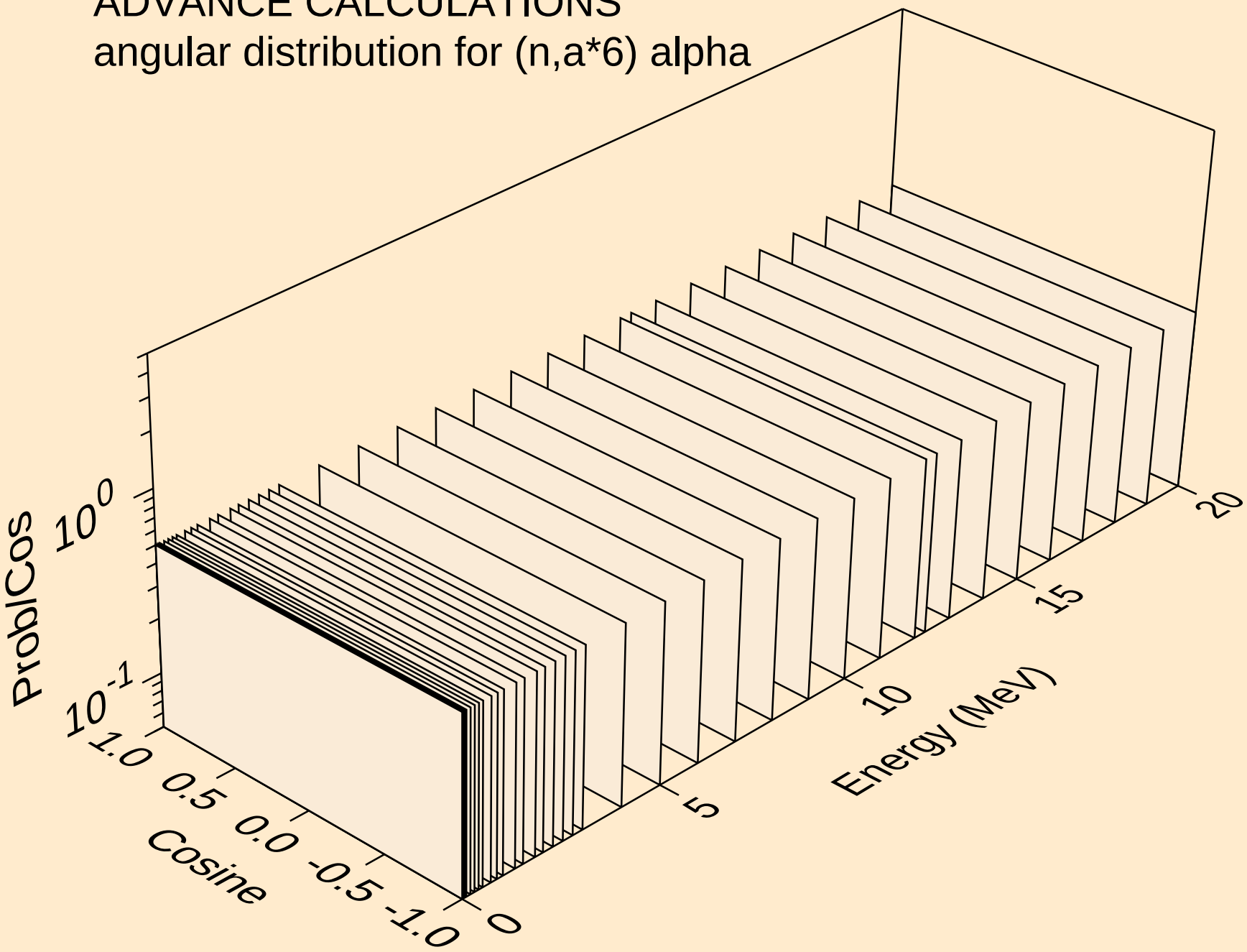
ADVANCE CALCULATIONS

angular distribution for (n,a*5) alpha



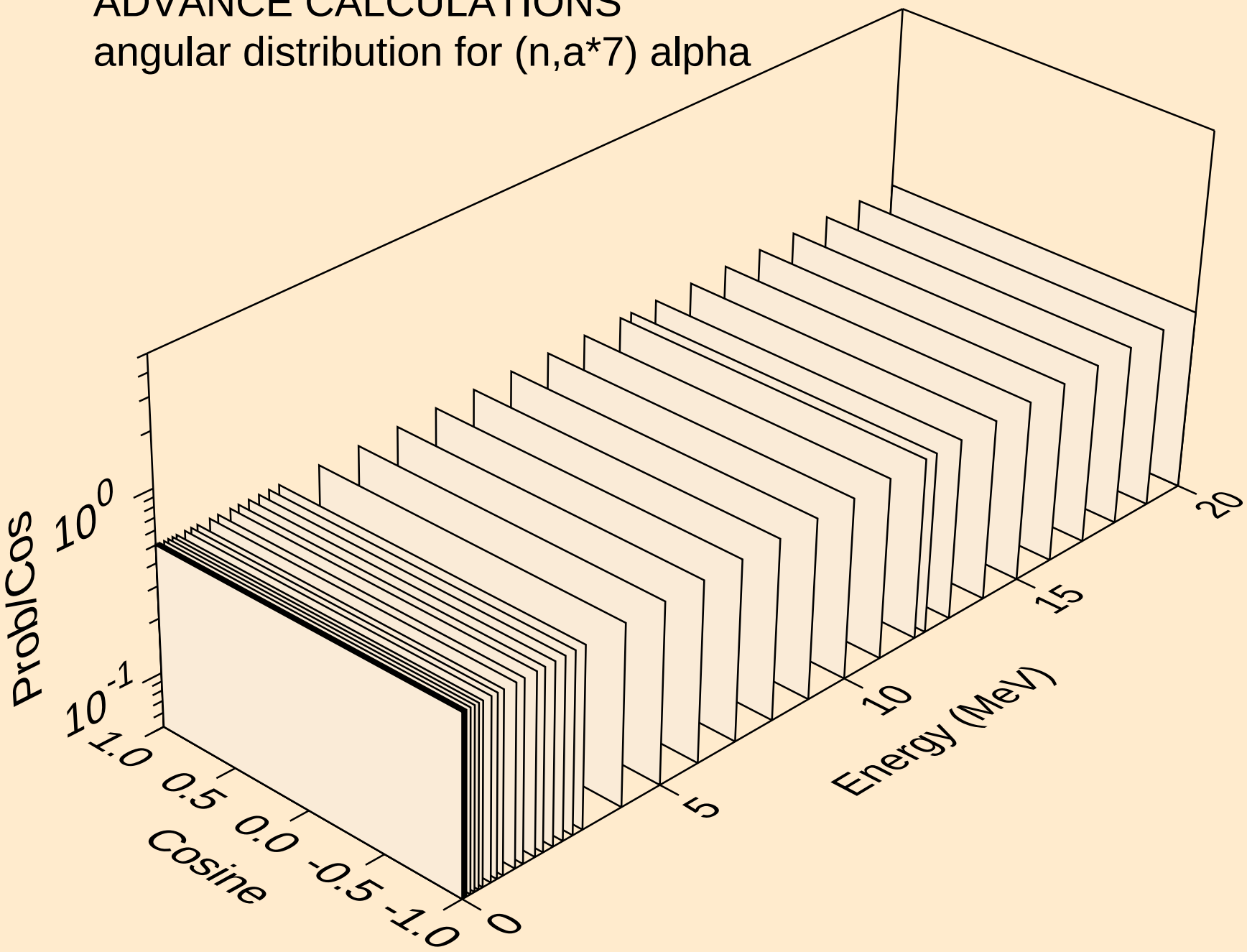
ADVANCE CALCULATIONS

angular distribution for (n,a*6) alpha



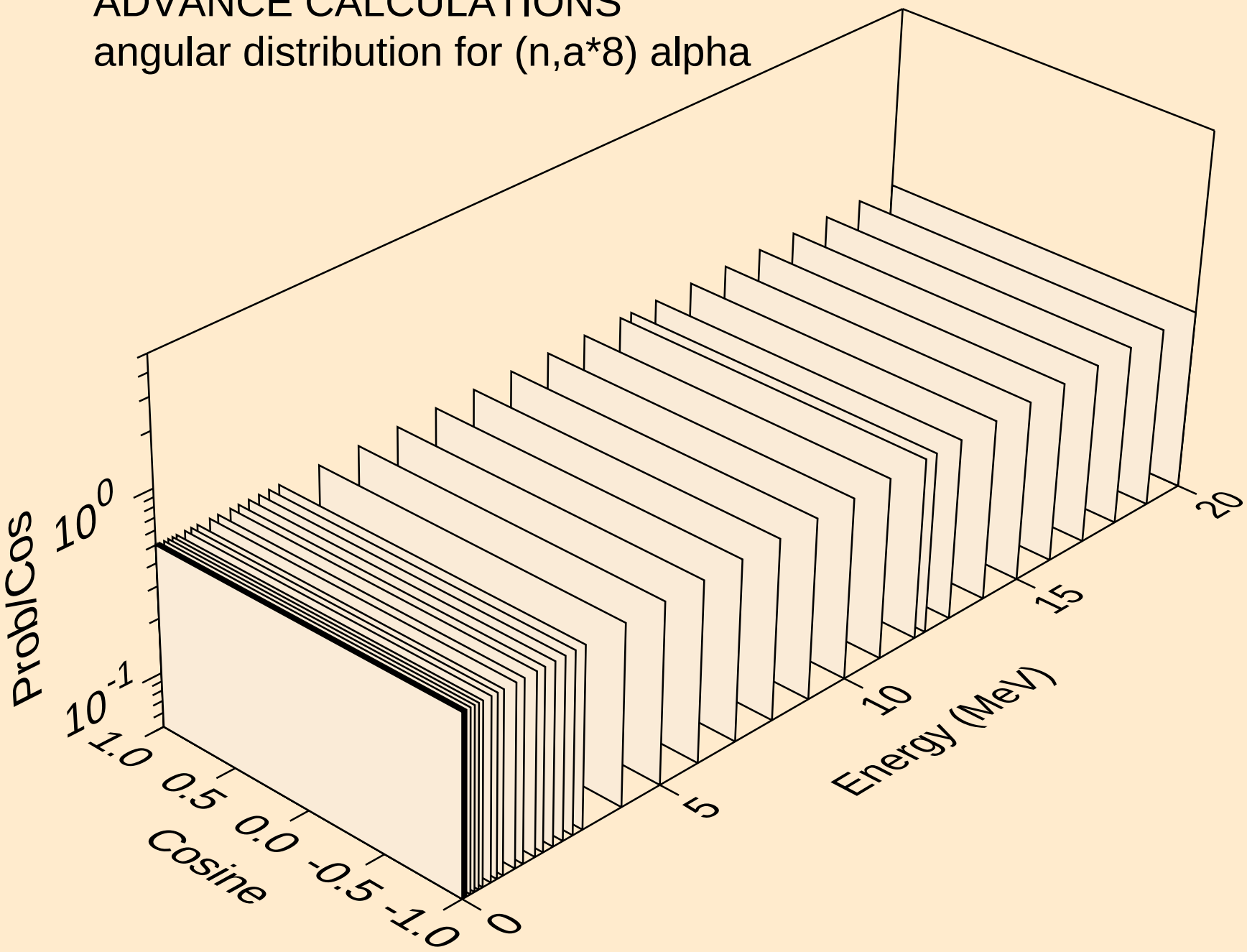
ADVANCE CALCULATIONS

angular distribution for (n,a*7) alpha



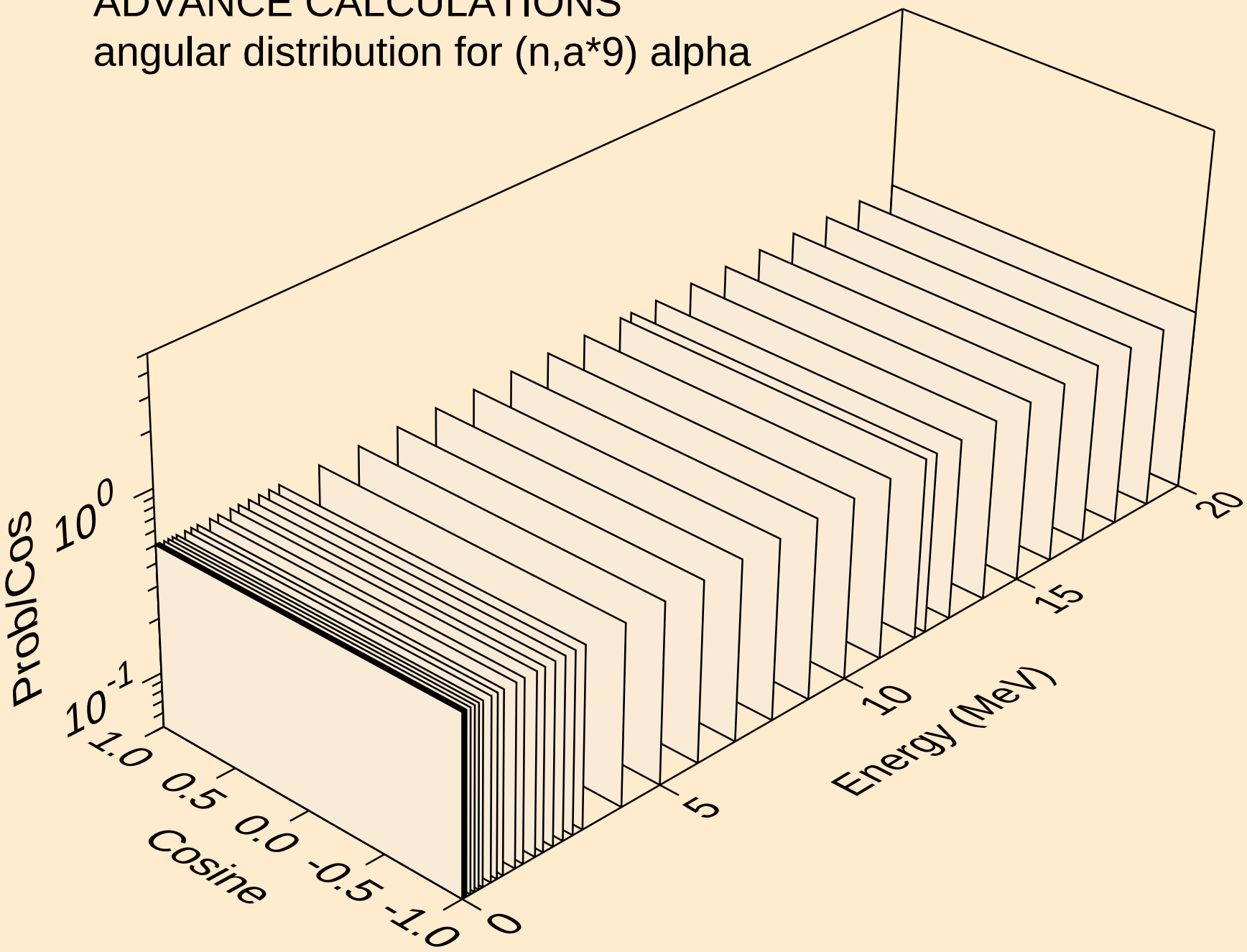
ADVANCE CALCULATIONS

angular distribution for (n,a*8) alpha



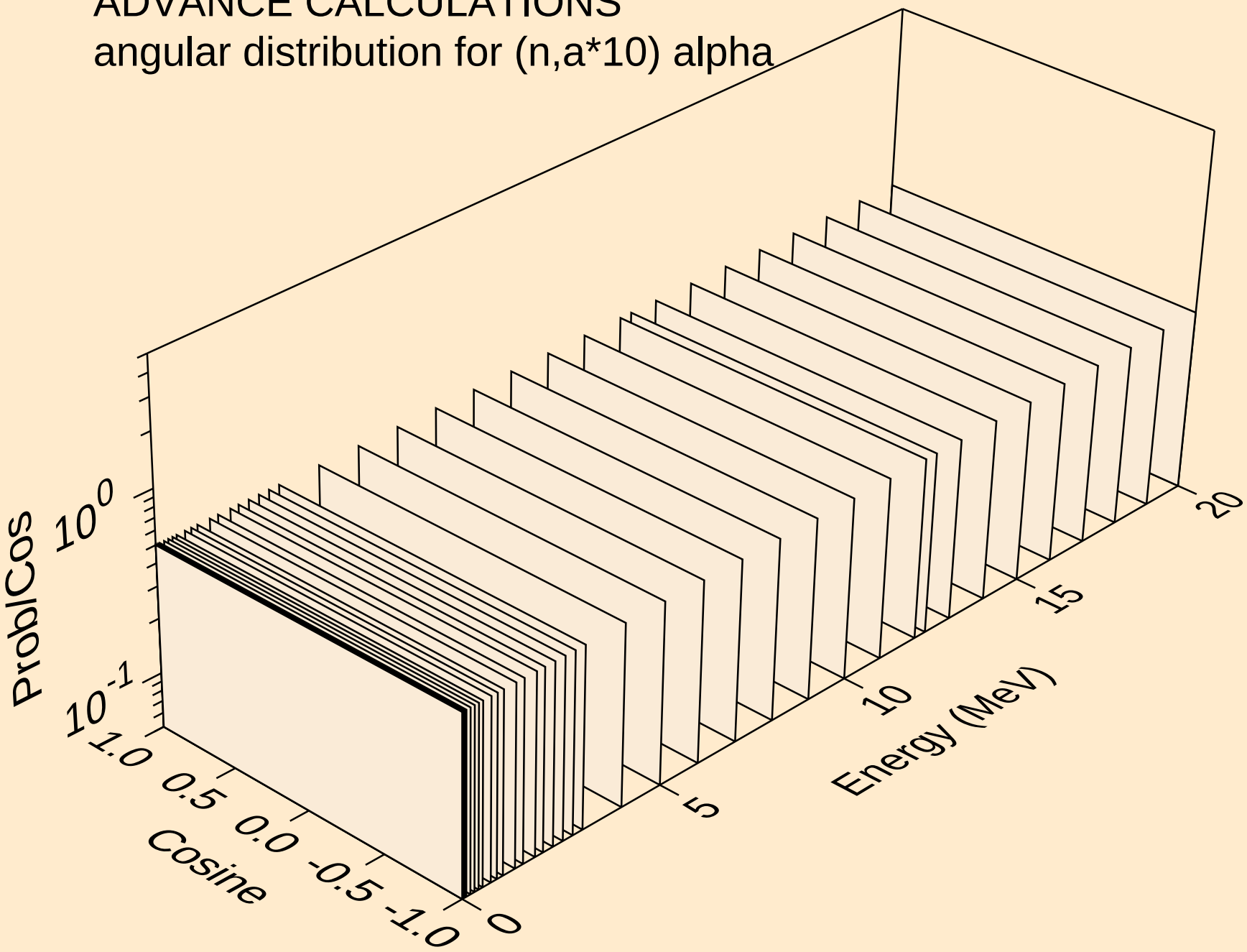
ADVANCE CALCULATIONS

angular distribution for (n,a*9) alpha



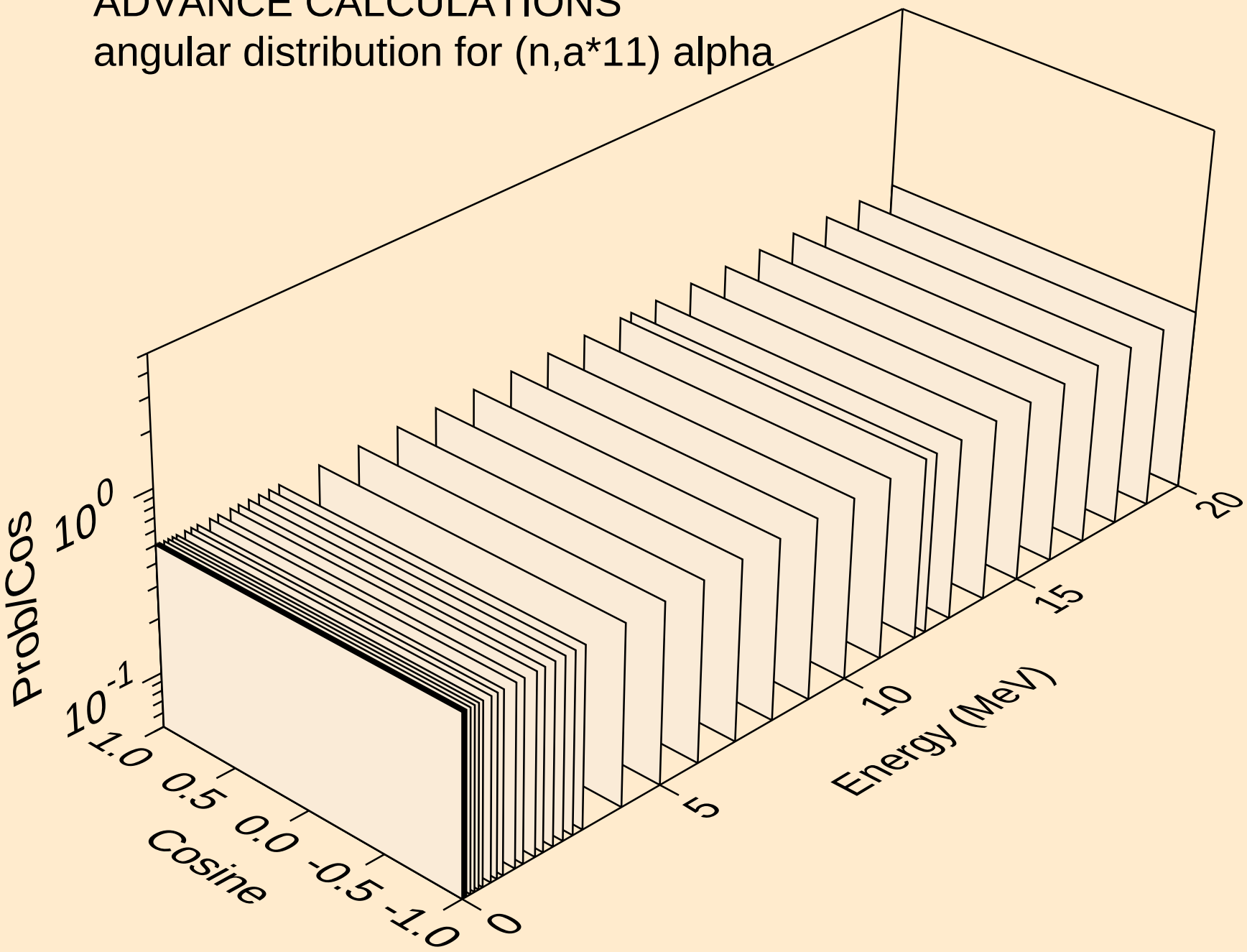
ADVANCE CALCULATIONS

angular distribution for (n,a*10) alpha



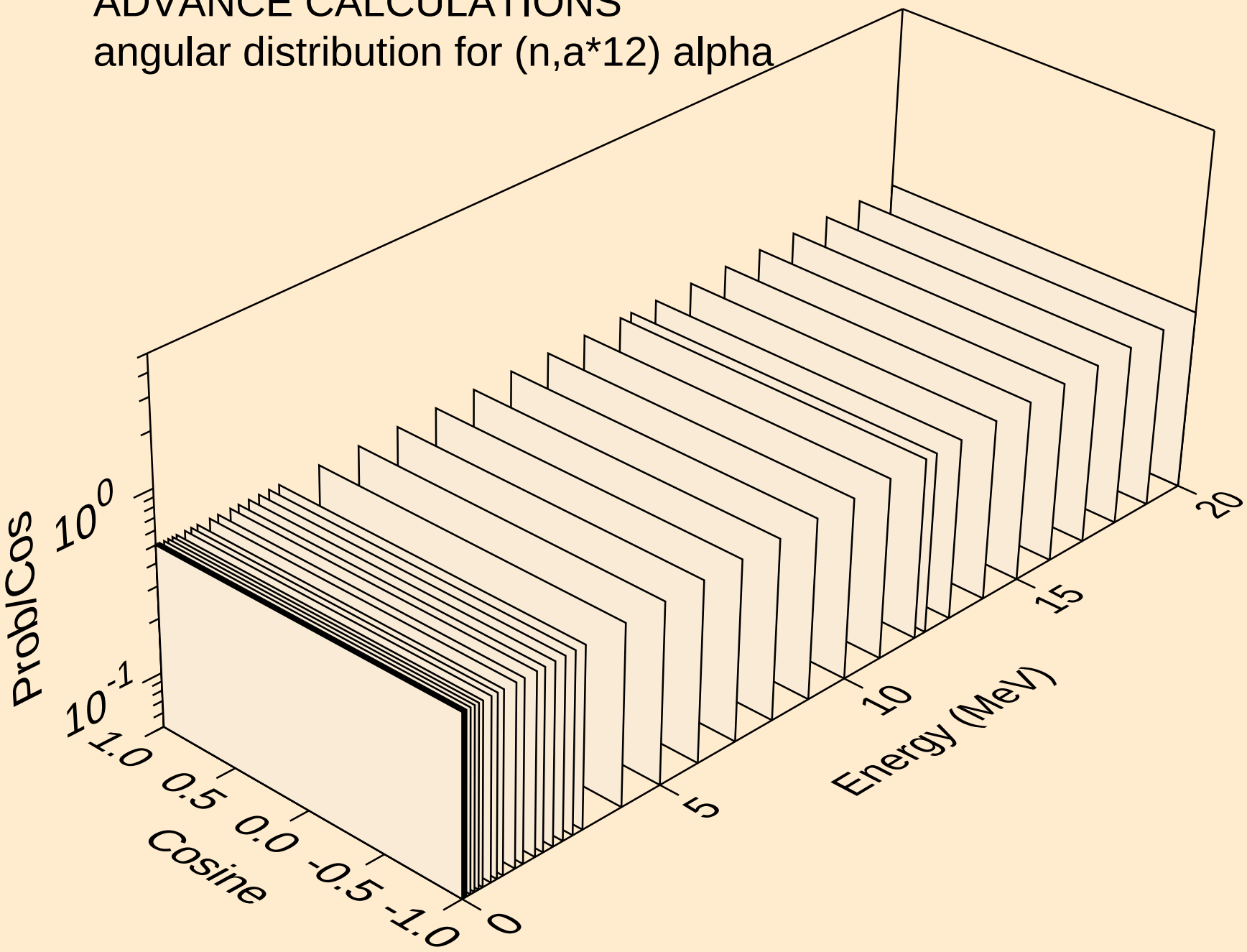
ADVANCE CALCULATIONS

angular distribution for (n,a*11) alpha



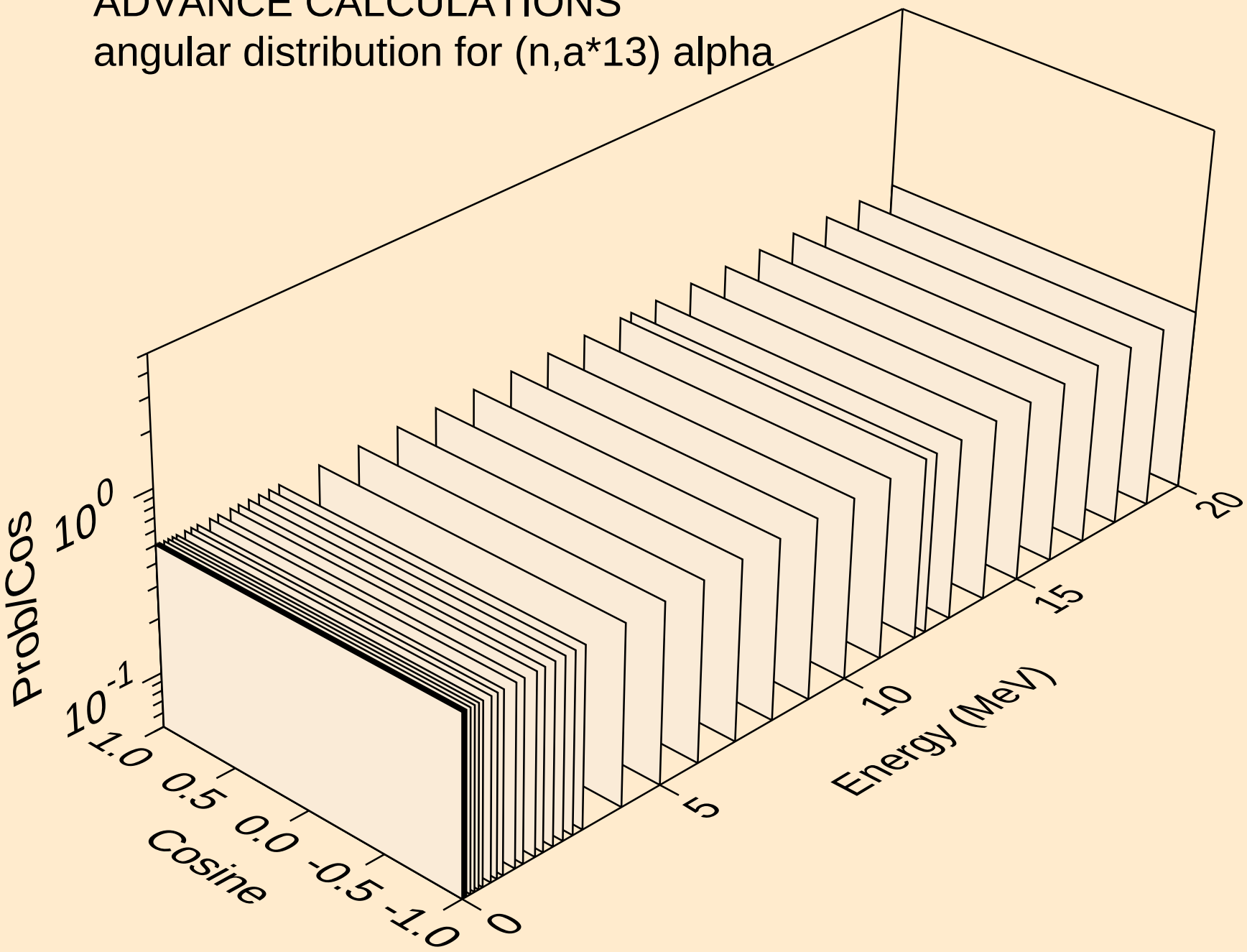
ADVANCE CALCULATIONS

angular distribution for (n,a*12) alpha



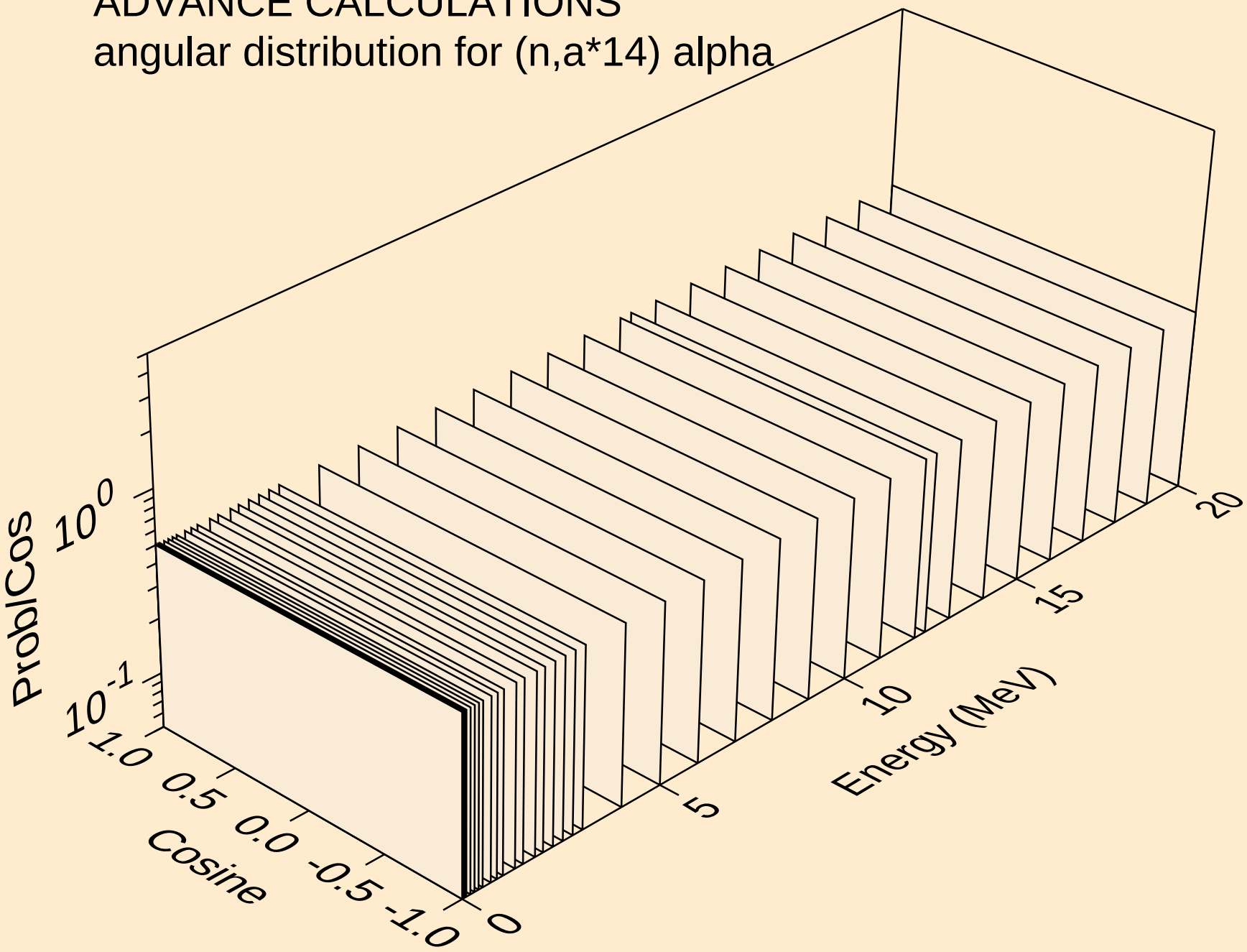
ADVANCE CALCULATIONS

angular distribution for (n,a*13) alpha



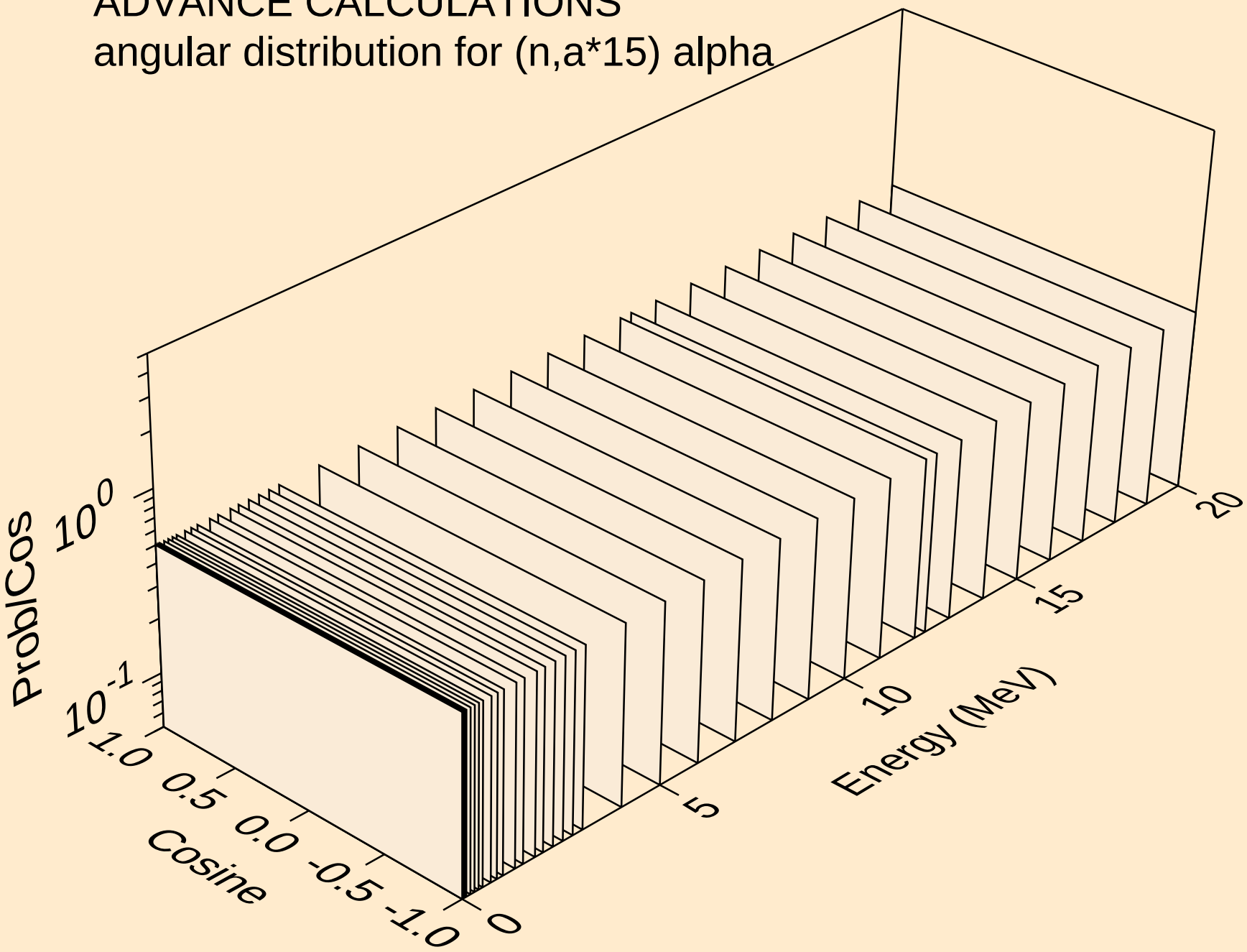
ADVANCE CALCULATIONS

angular distribution for (n,a*14) alpha



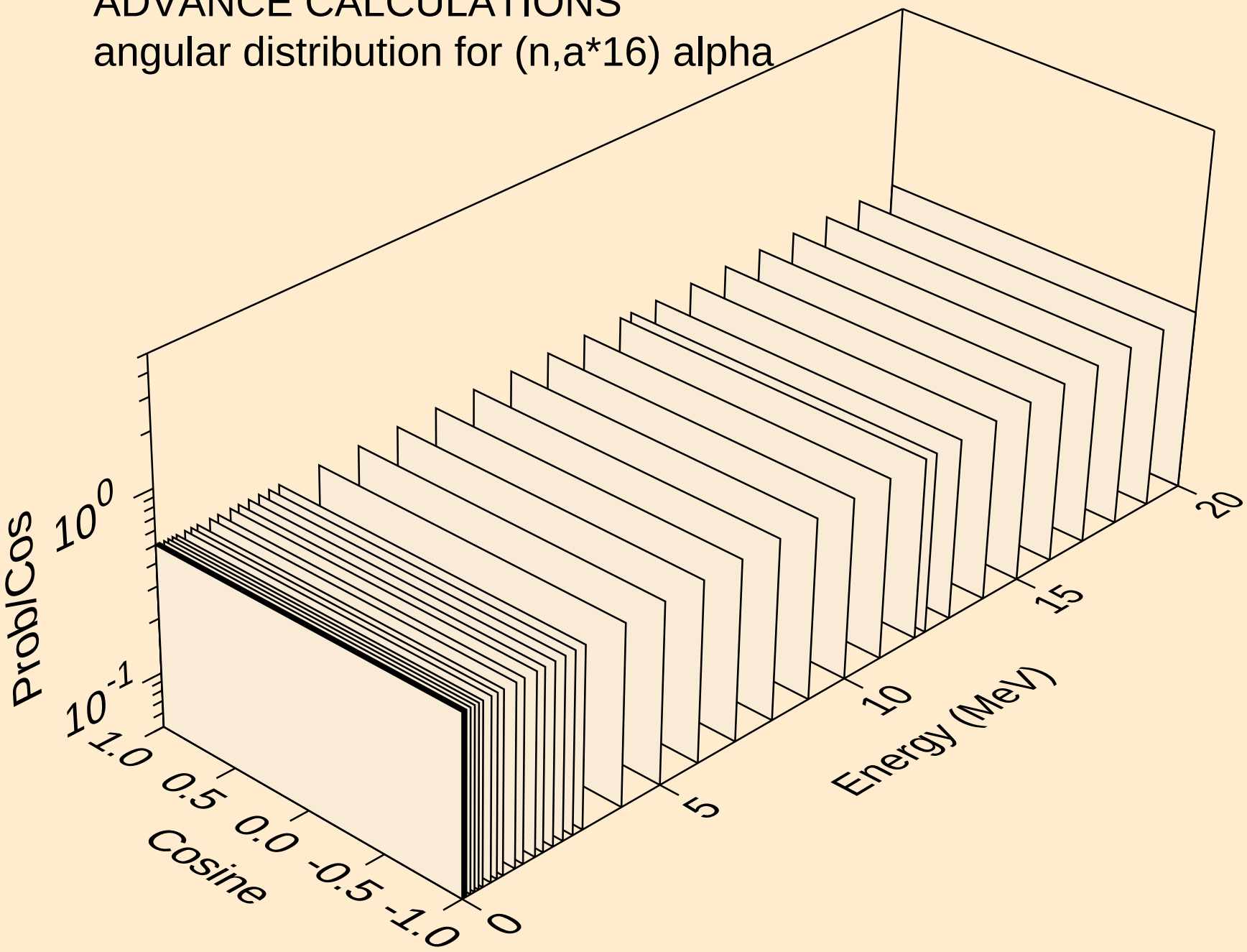
ADVANCE CALCULATIONS

angular distribution for (n,a*15) alpha



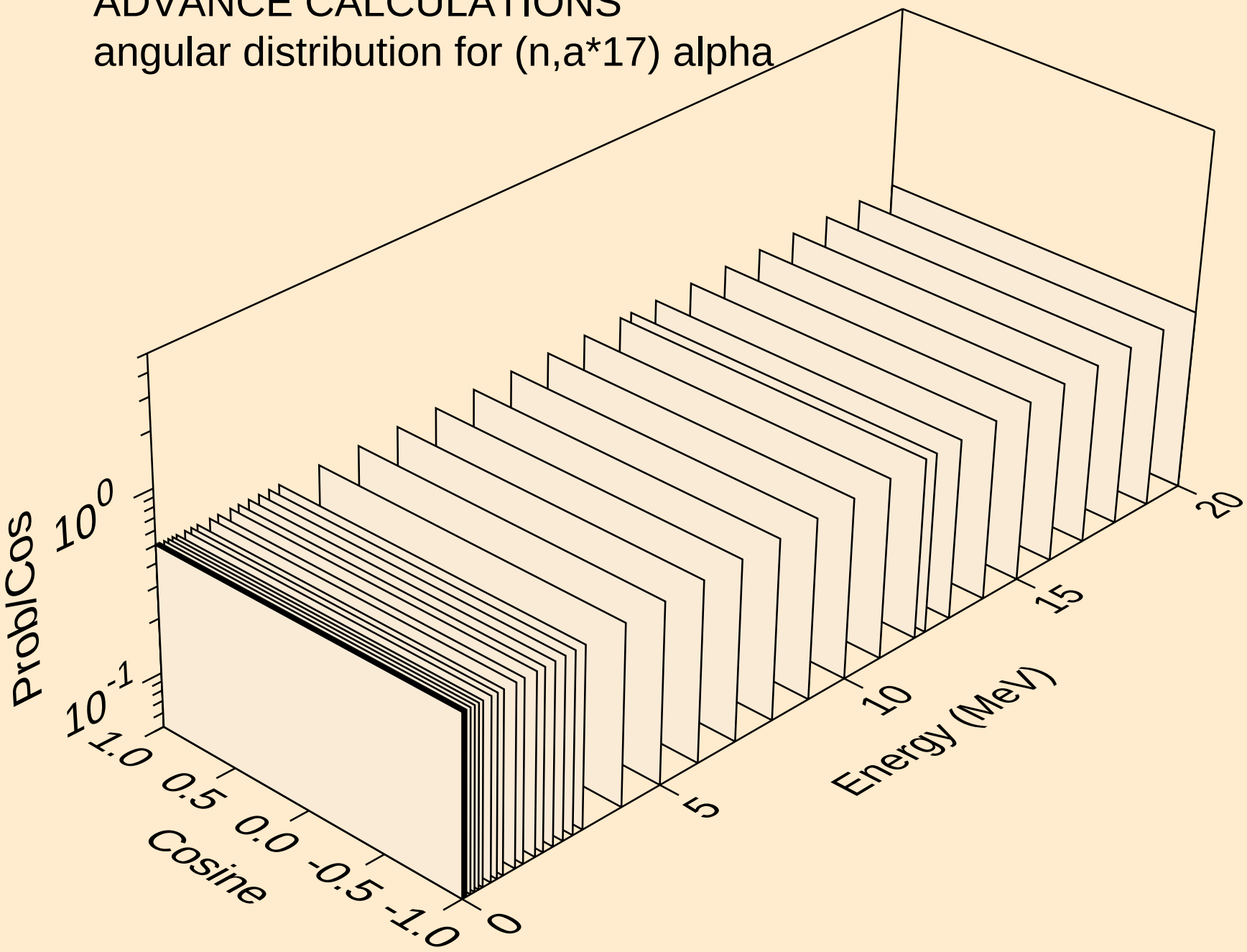
ADVANCE CALCULATIONS

angular distribution for (n,a*16) alpha



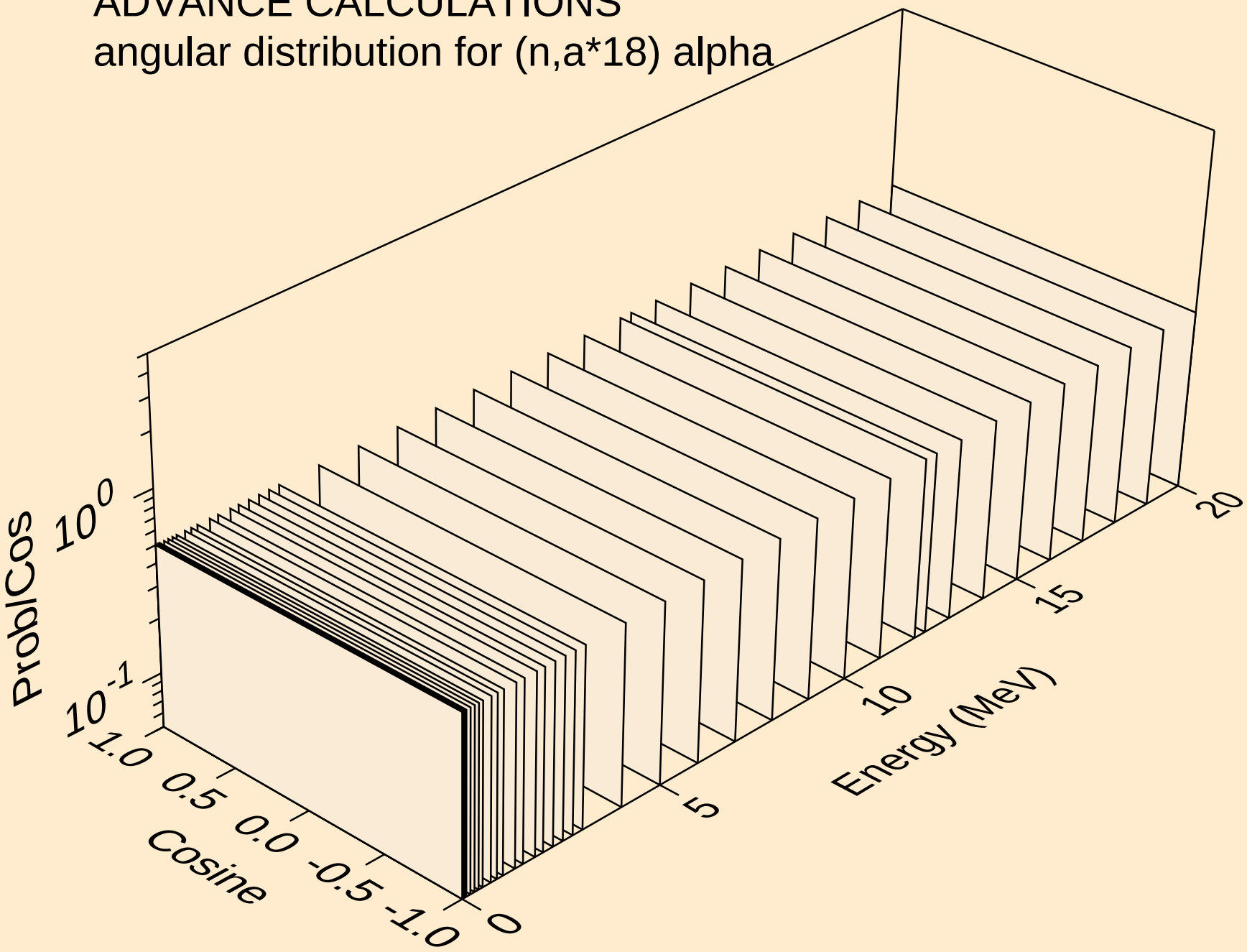
ADVANCE CALCULATIONS

angular distribution for (n,a*17) alpha



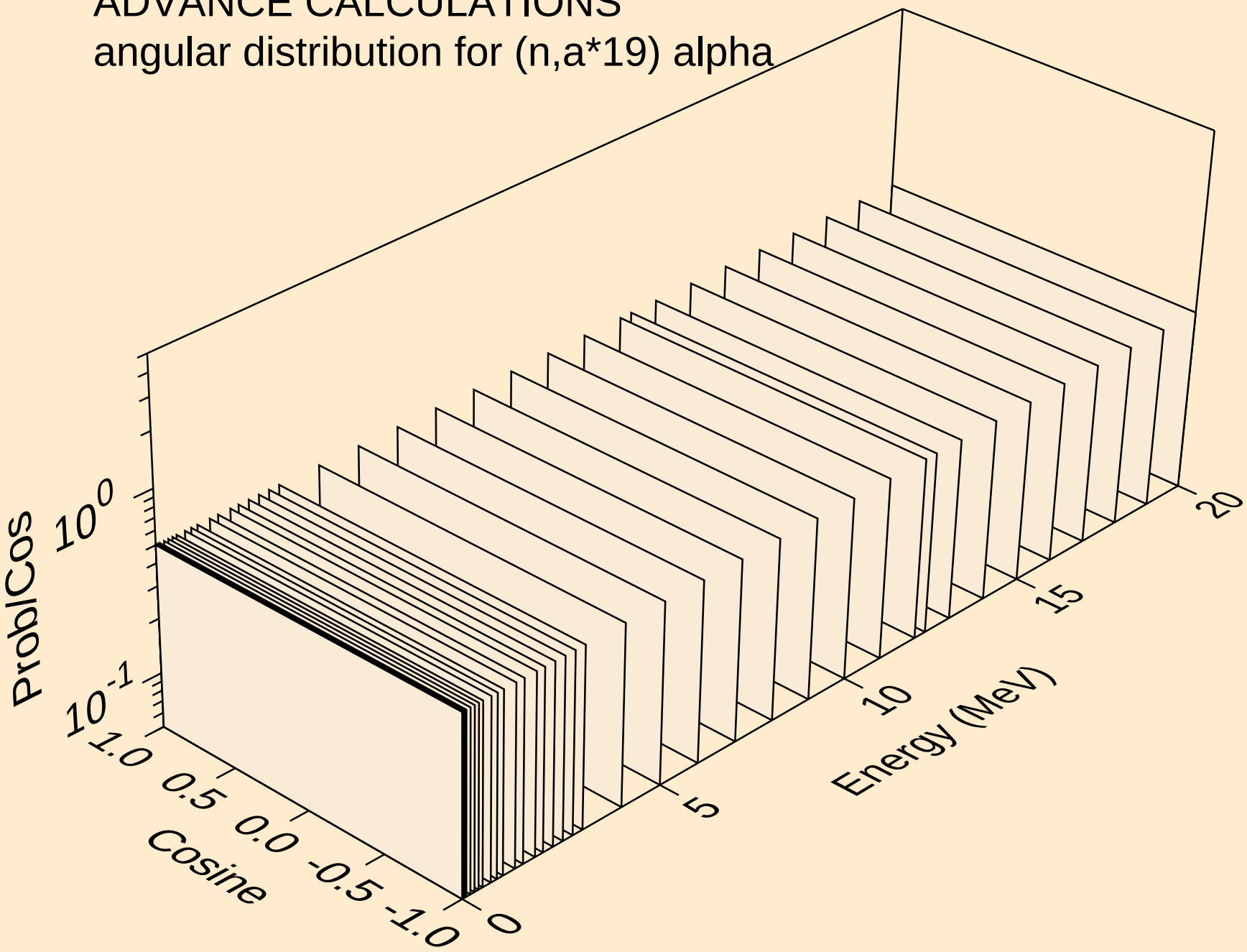
ADVANCE CALCULATIONS

angular distribution for (n,a*18) alpha



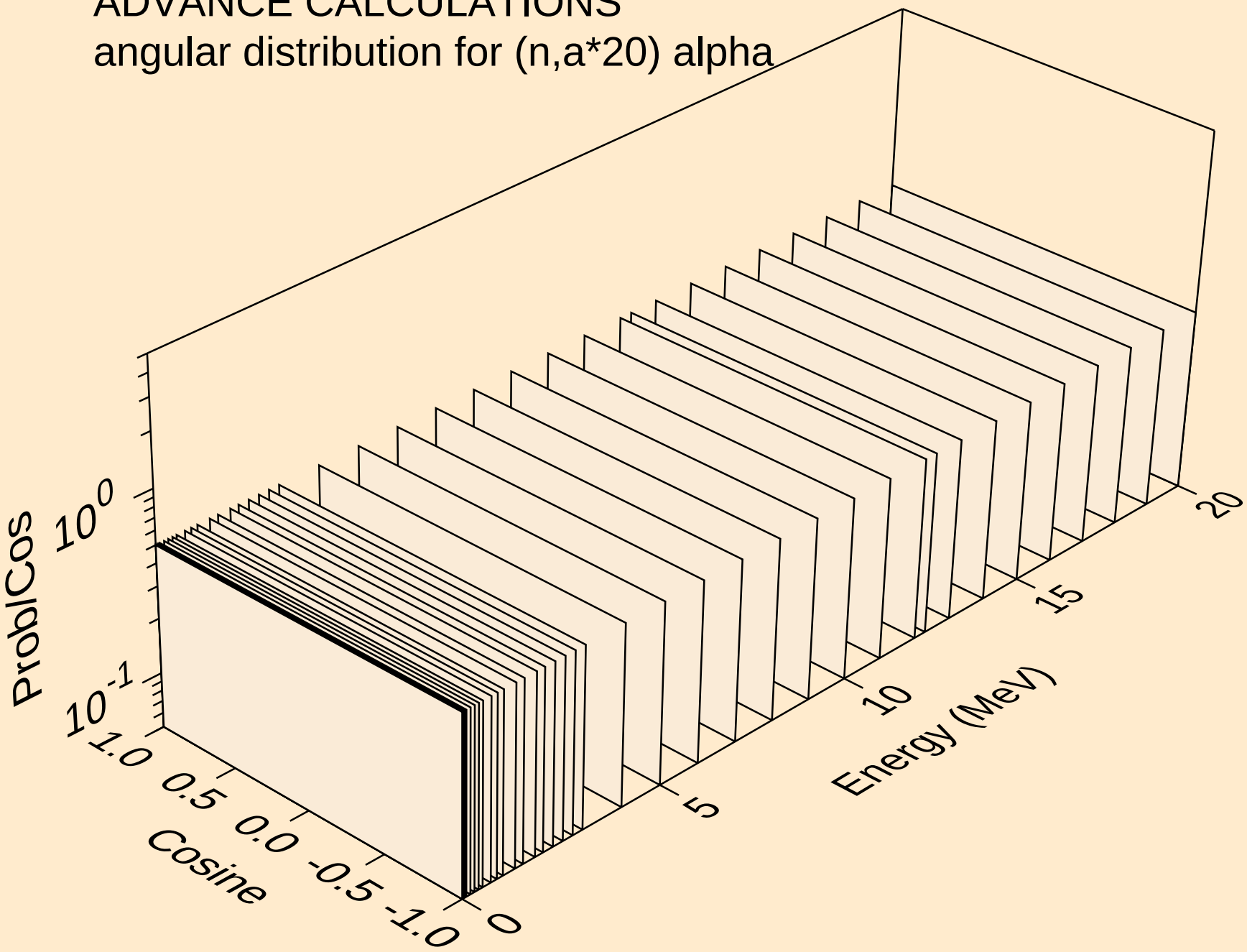
ADVANCE CALCULATIONS

angular distribution for (n,a*19) alpha



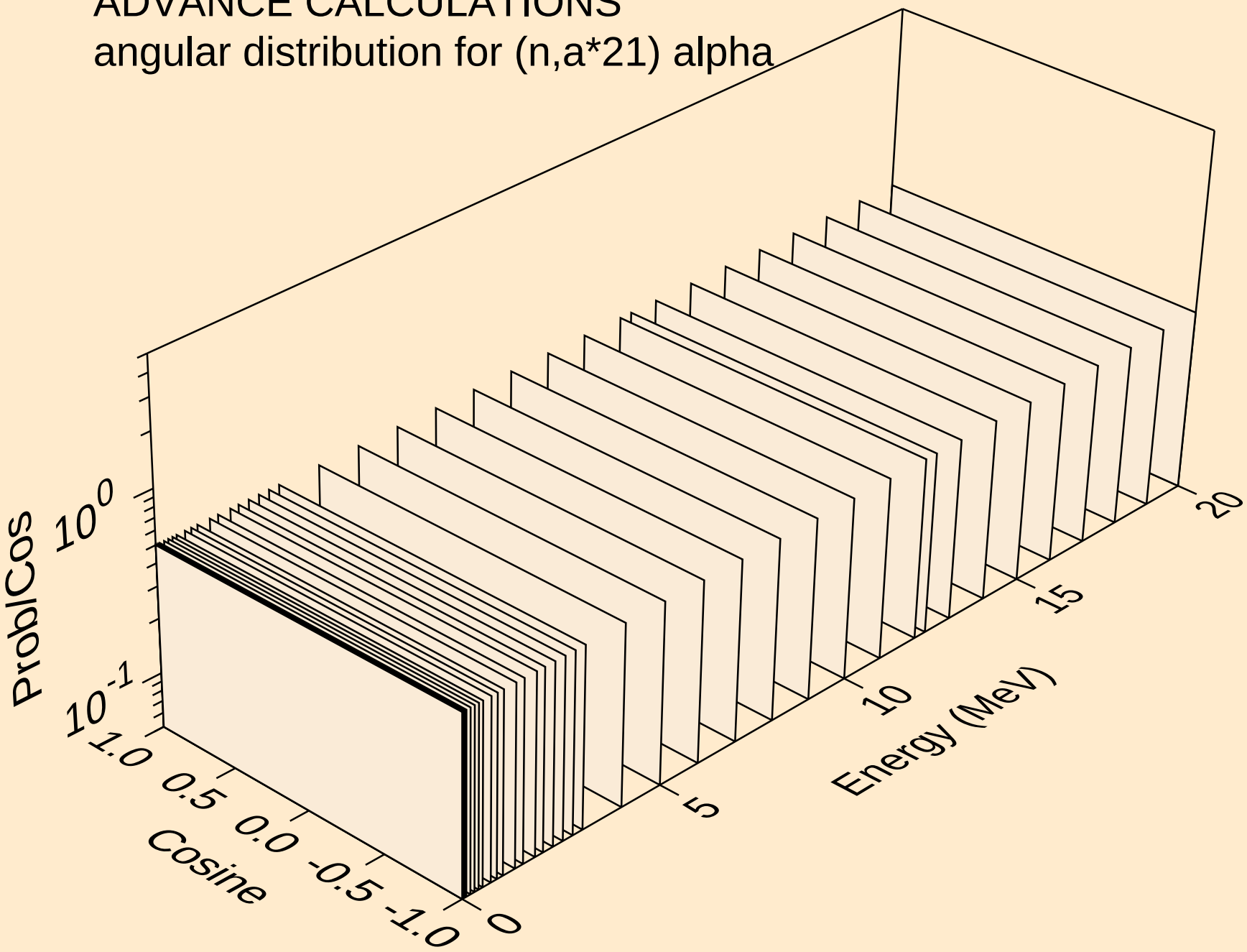
ADVANCE CALCULATIONS

angular distribution for (n,a*20) alpha



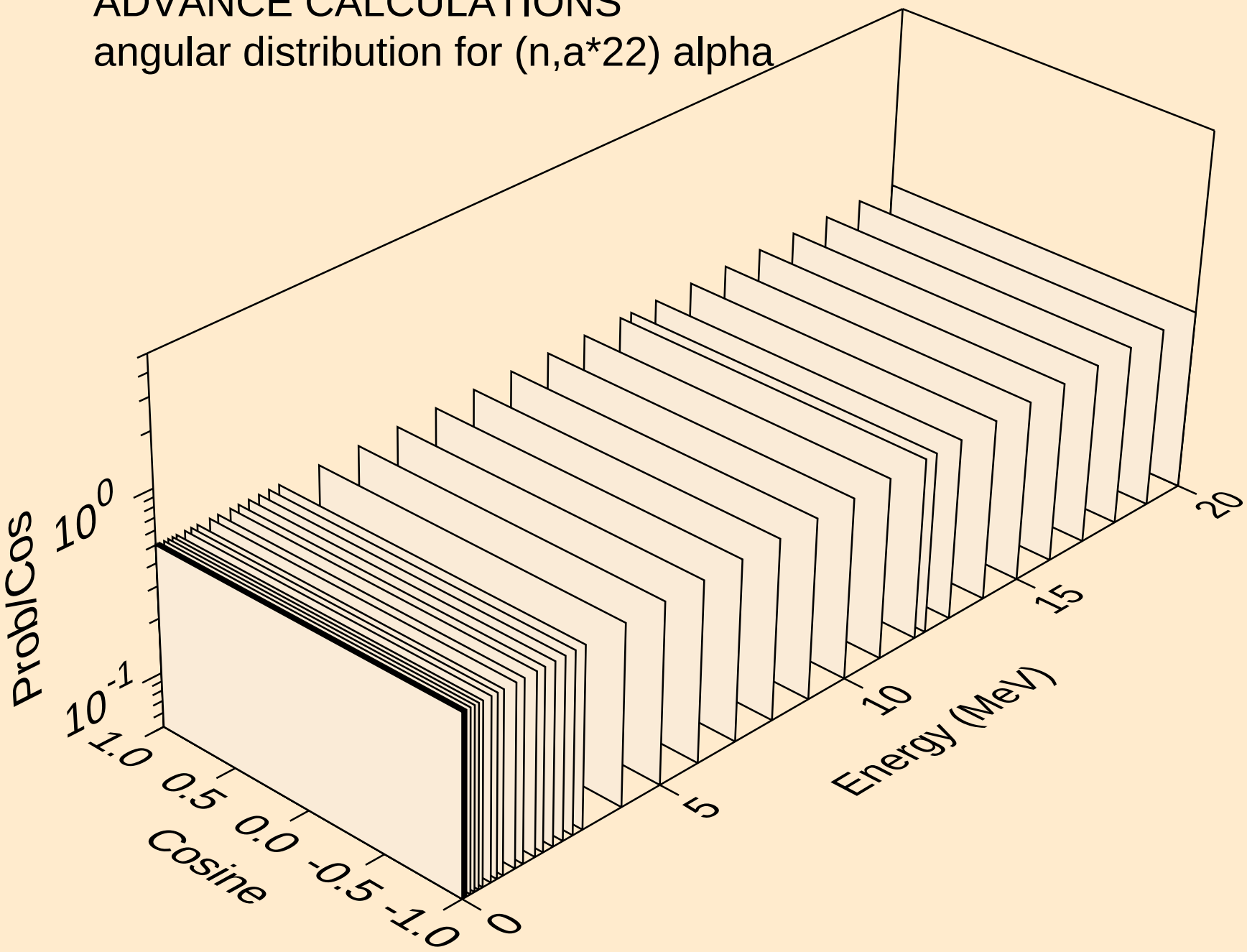
ADVANCE CALCULATIONS

angular distribution for (n,a*21) alpha



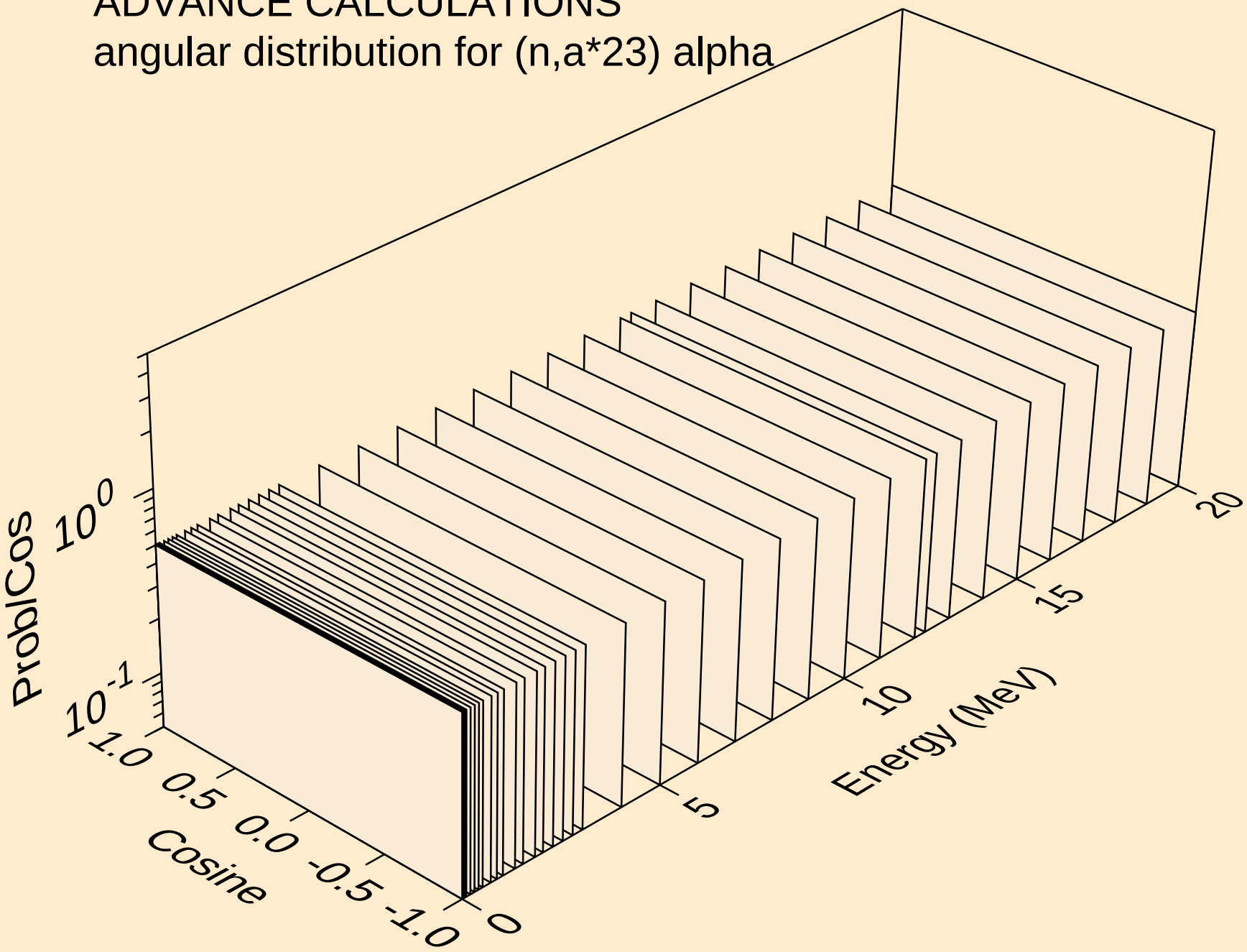
ADVANCE CALCULATIONS

angular distribution for (n,a*22) alpha



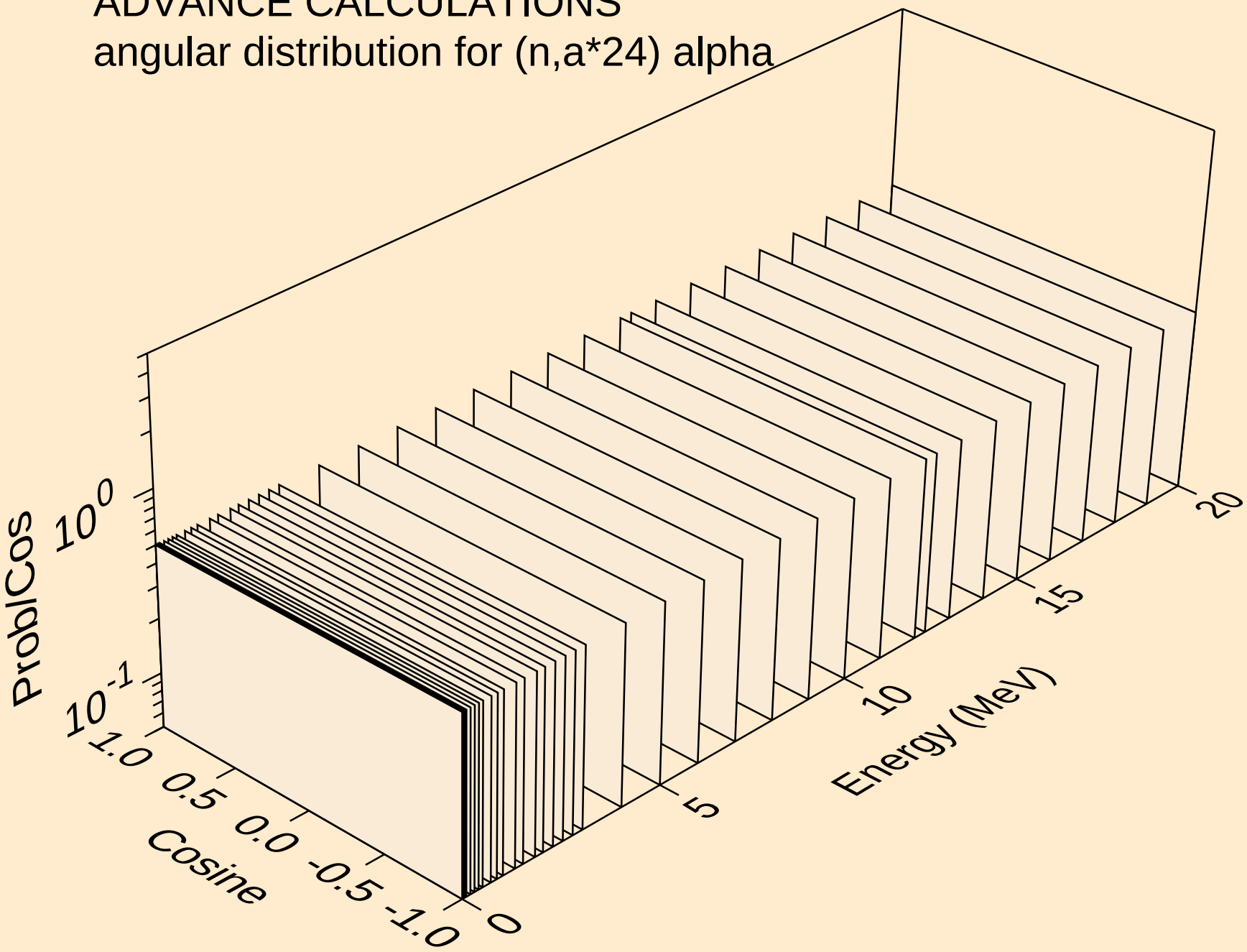
ADVANCE CALCULATIONS

angular distribution for (n,a*23) alpha



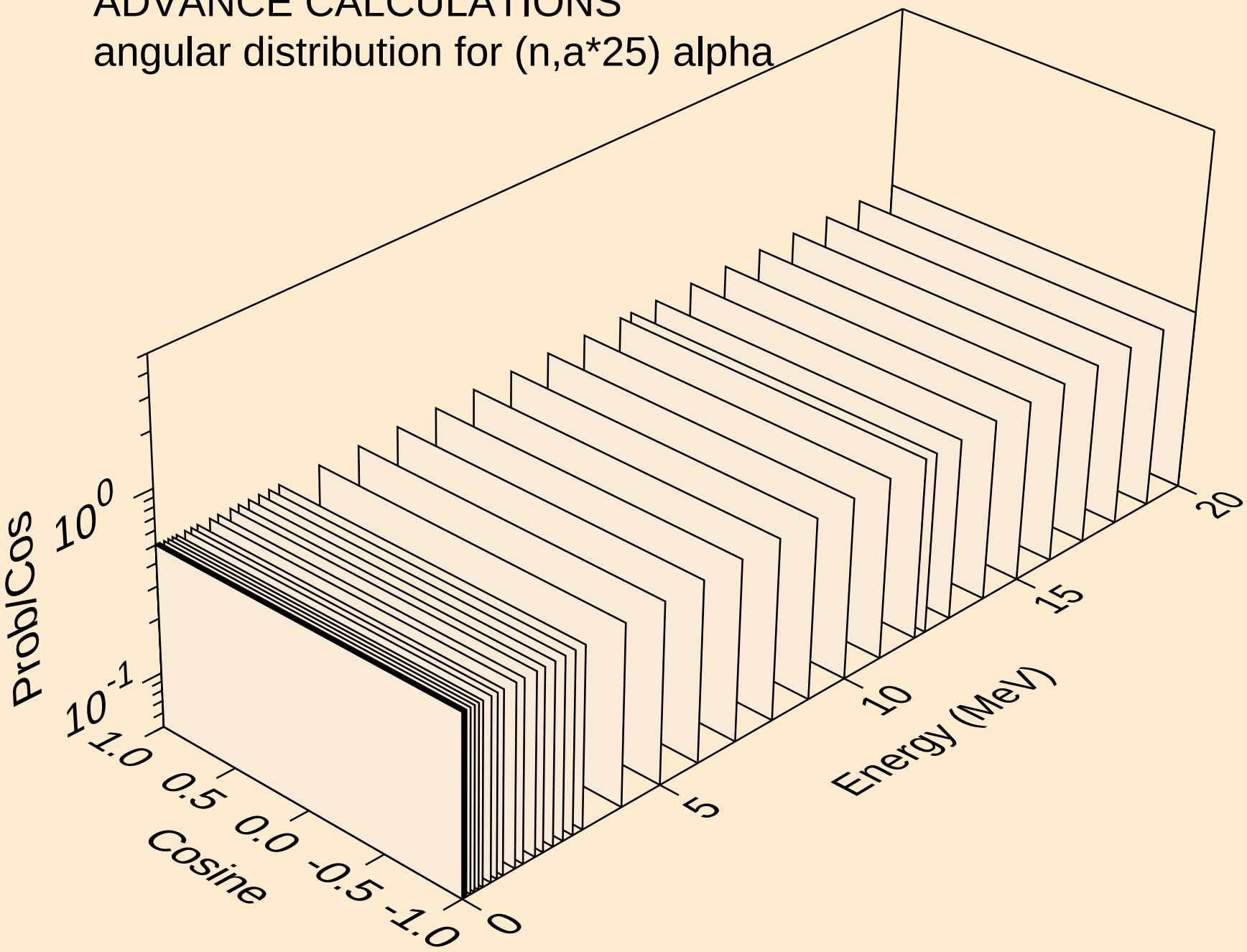
ADVANCE CALCULATIONS

angular distribution for (n,a*24) alpha



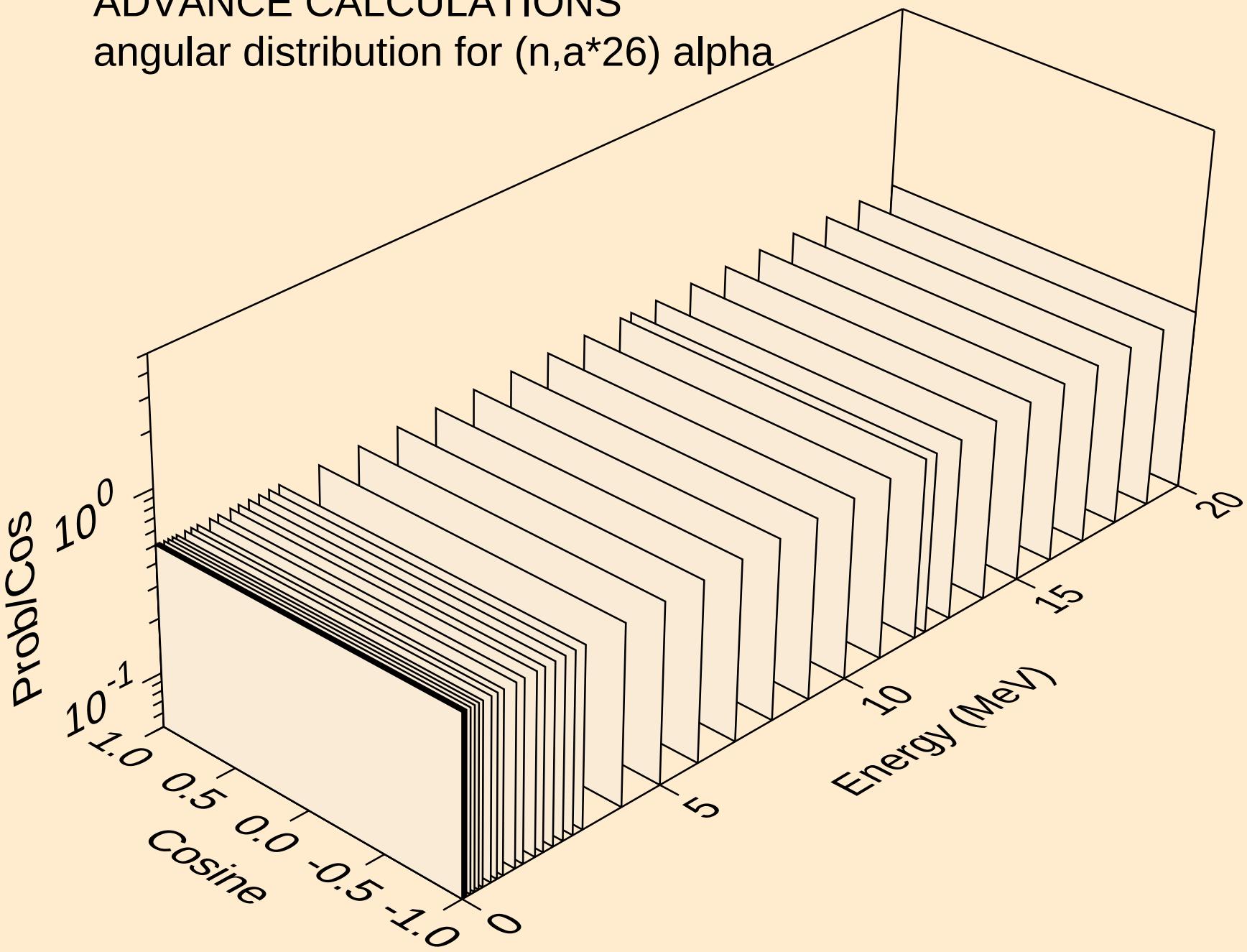
ADVANCE CALCULATIONS

angular distribution for (n,a*25) alpha



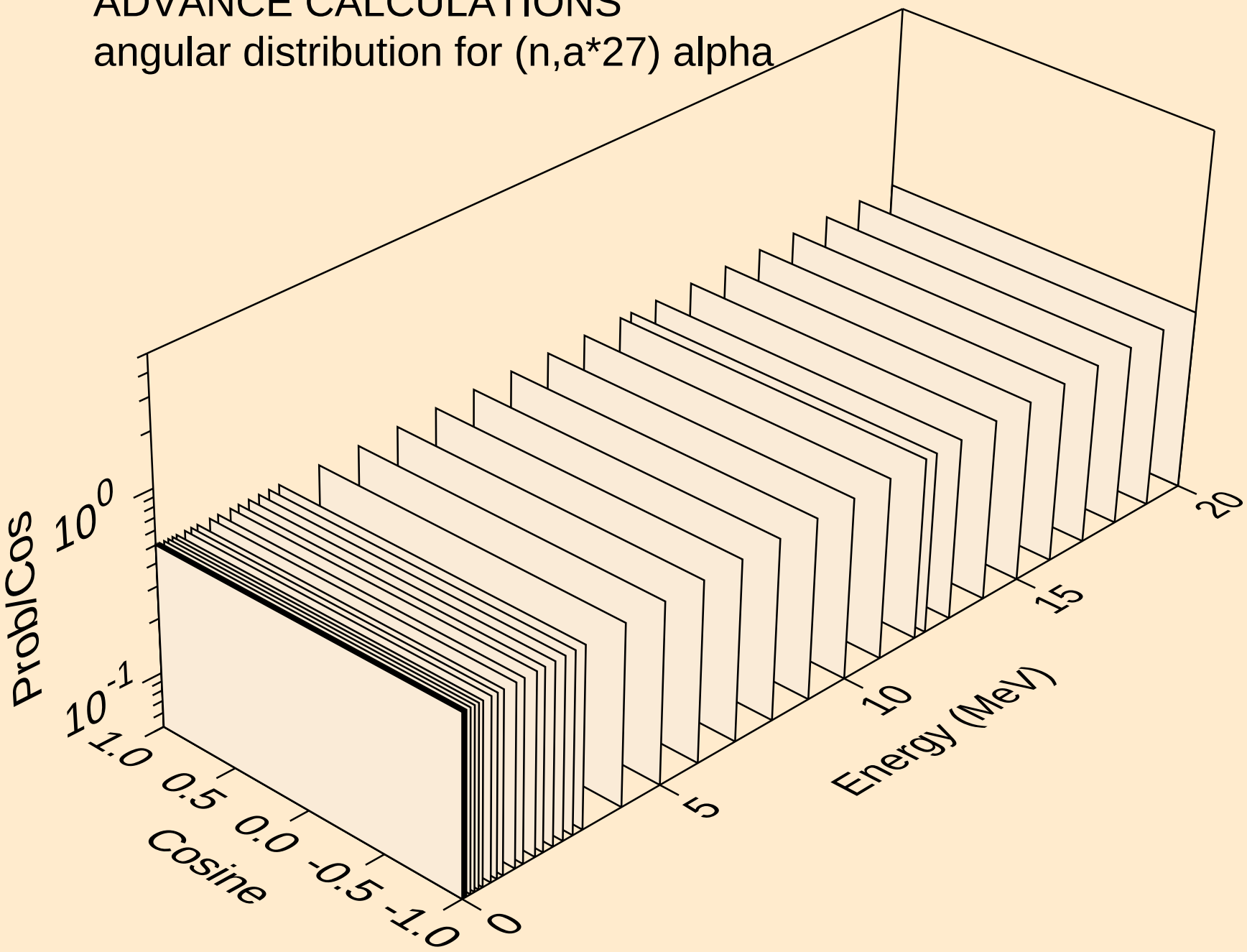
ADVANCE CALCULATIONS

angular distribution for (n,a*26) alpha



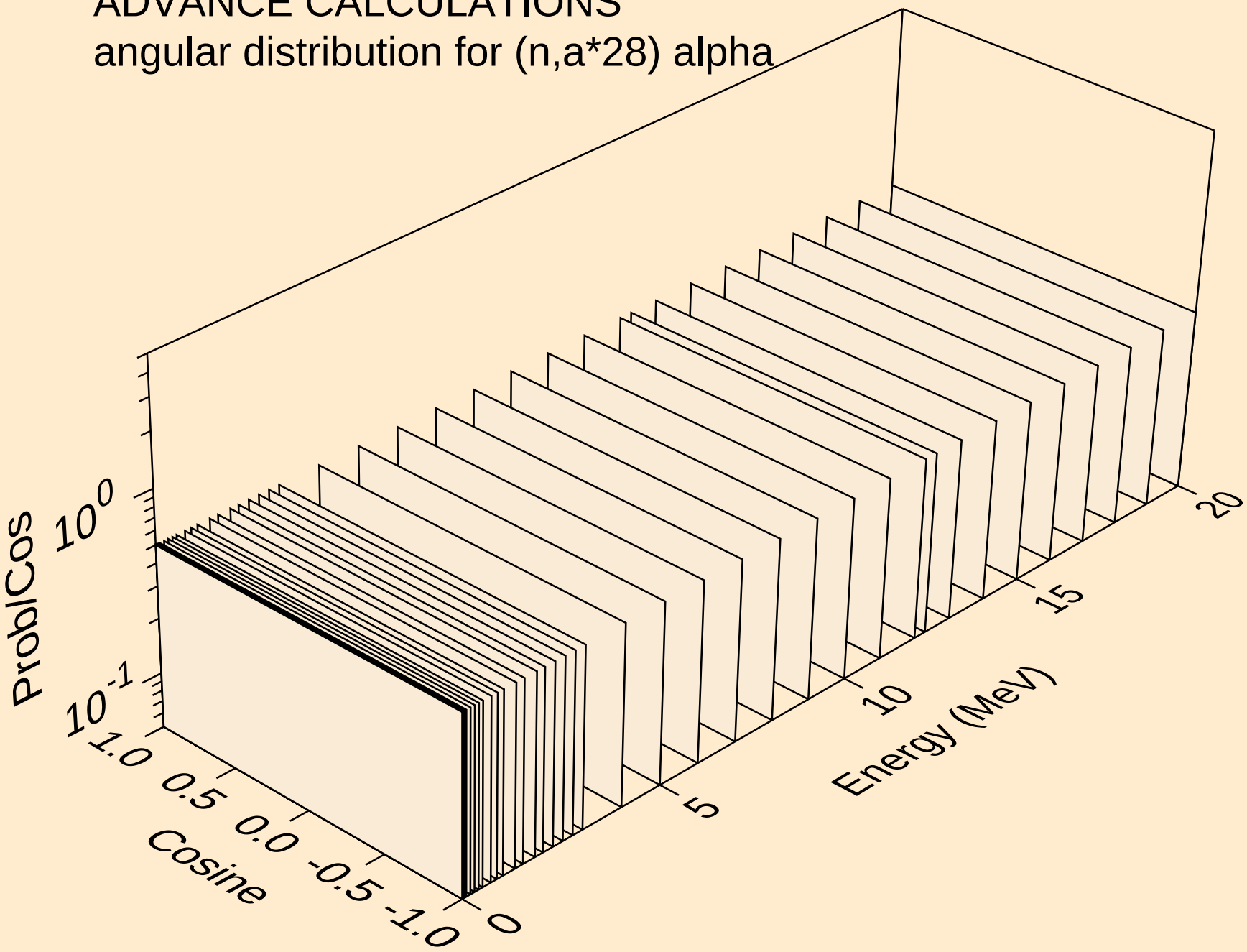
ADVANCE CALCULATIONS

angular distribution for (n,a*27) alpha



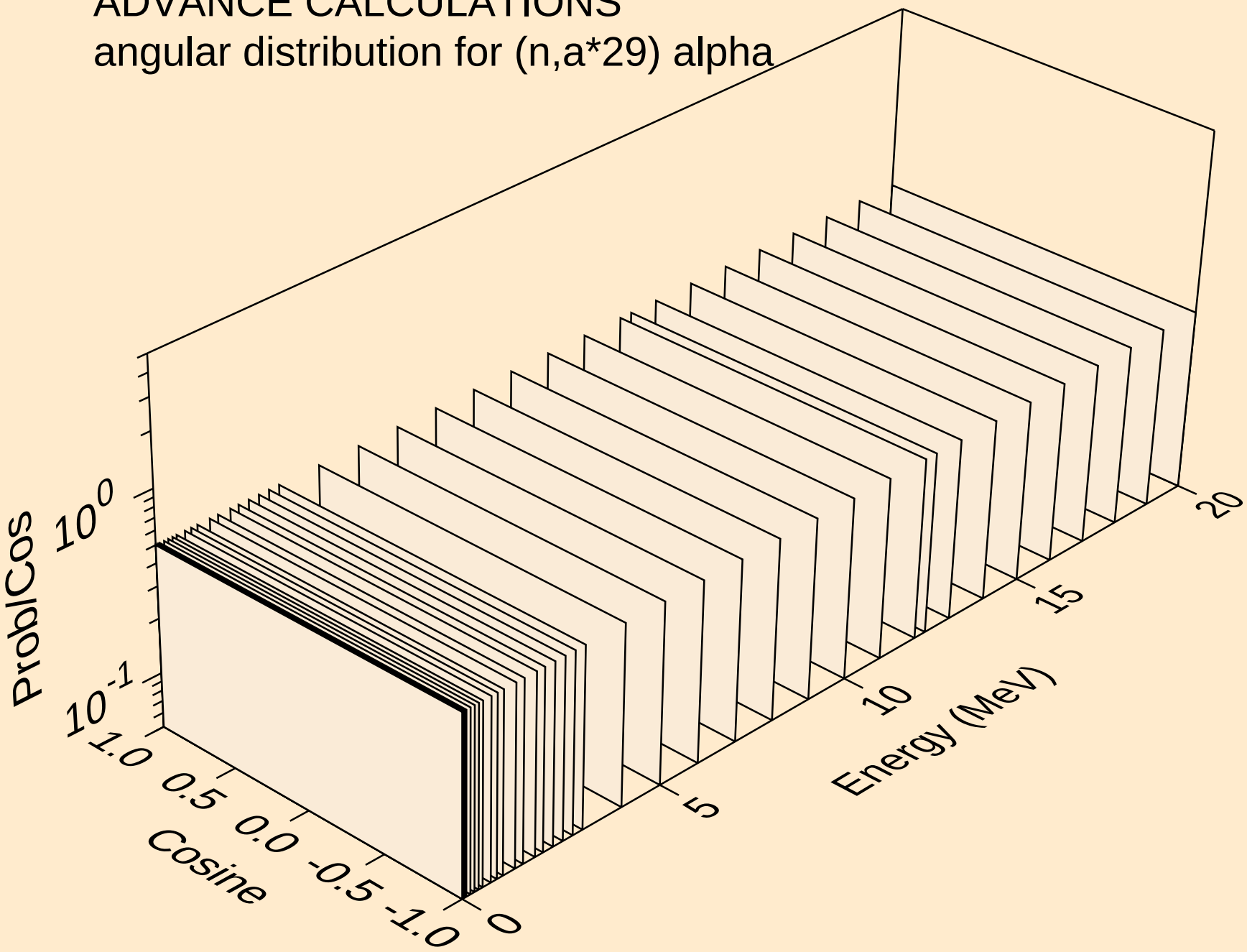
ADVANCE CALCULATIONS

angular distribution for (n,a*28) alpha



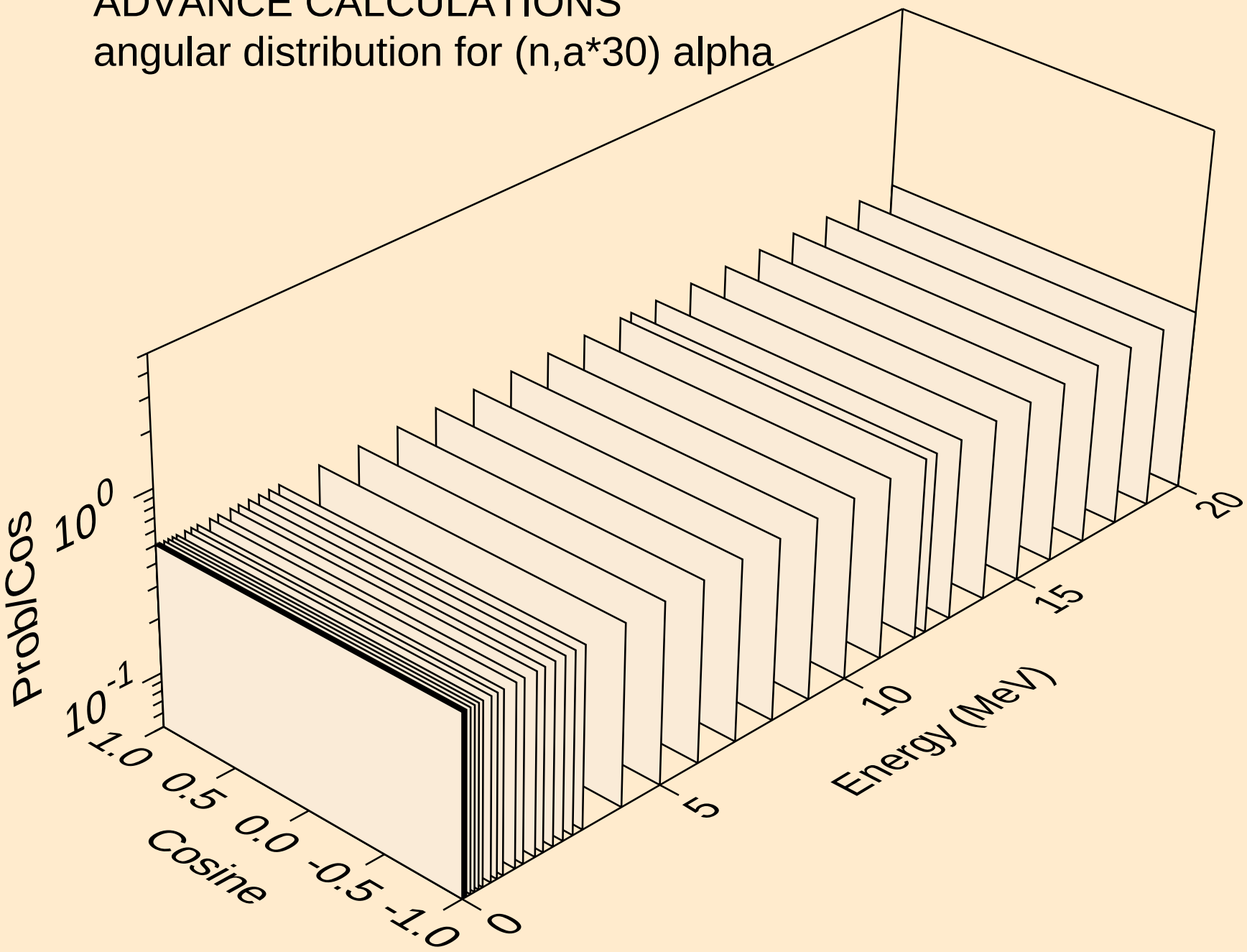
ADVANCE CALCULATIONS

angular distribution for (n,a*29) alpha



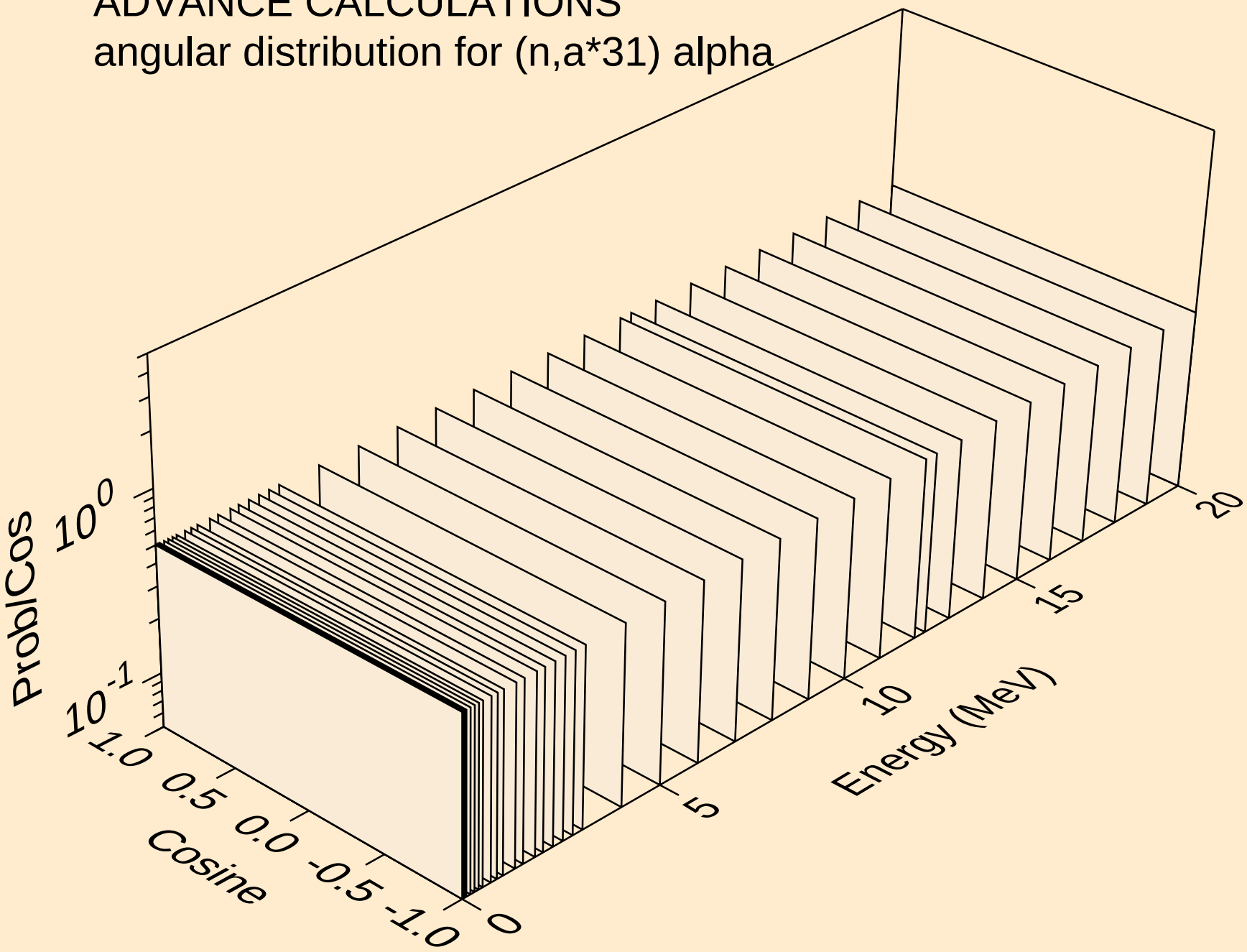
ADVANCE CALCULATIONS

angular distribution for (n,a*30) alpha



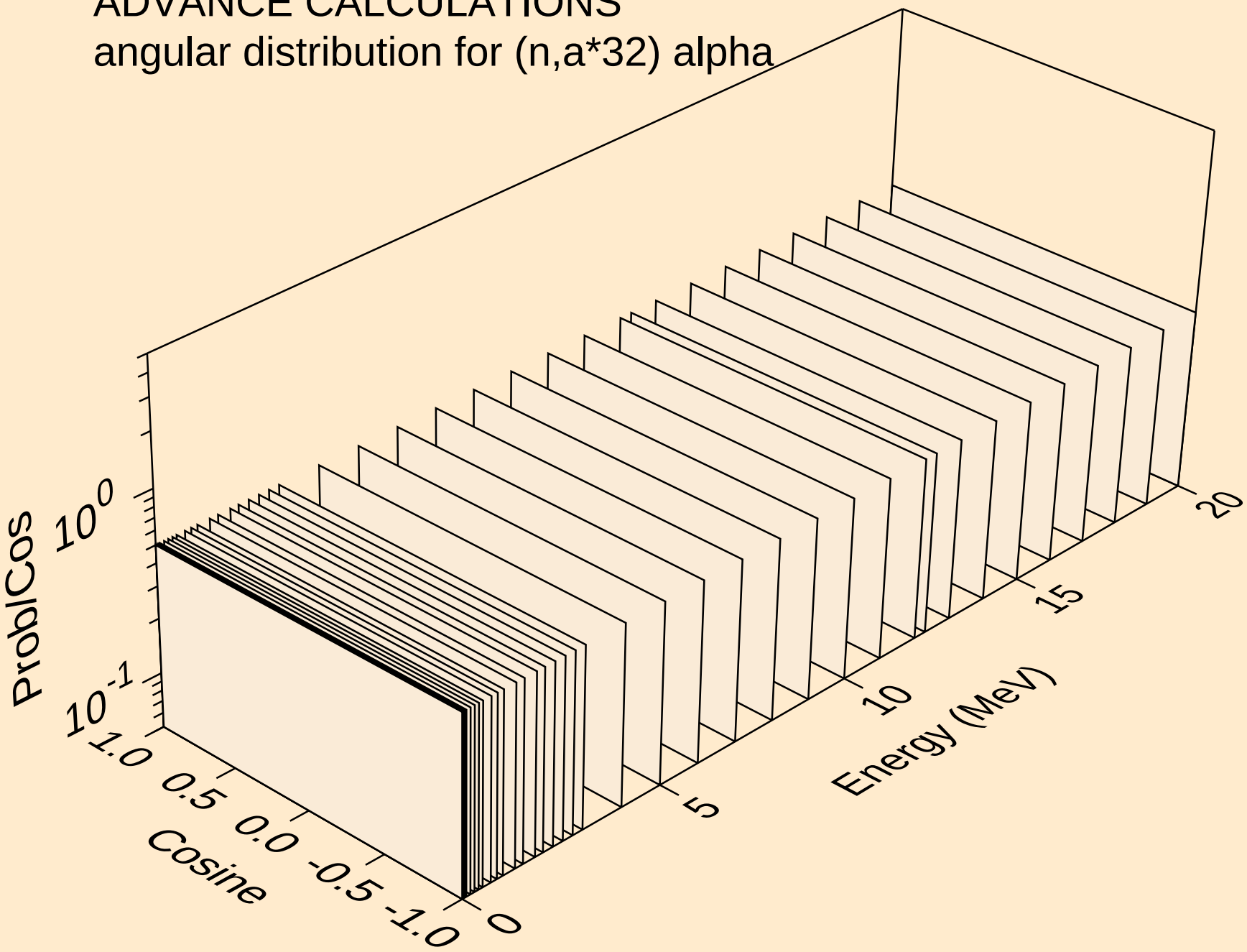
ADVANCE CALCULATIONS

angular distribution for (n,a*31) alpha



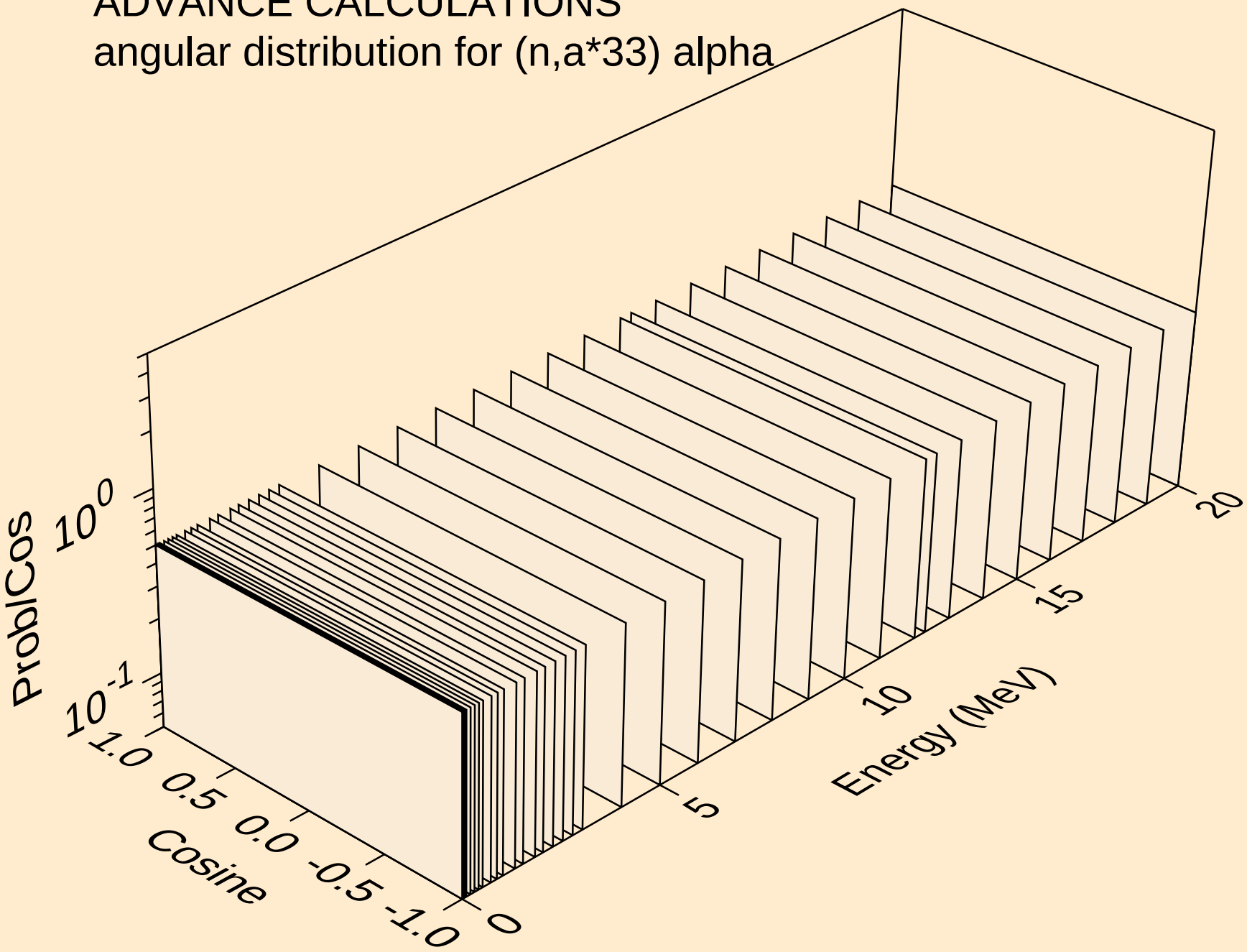
ADVANCE CALCULATIONS

angular distribution for (n,a*32) alpha



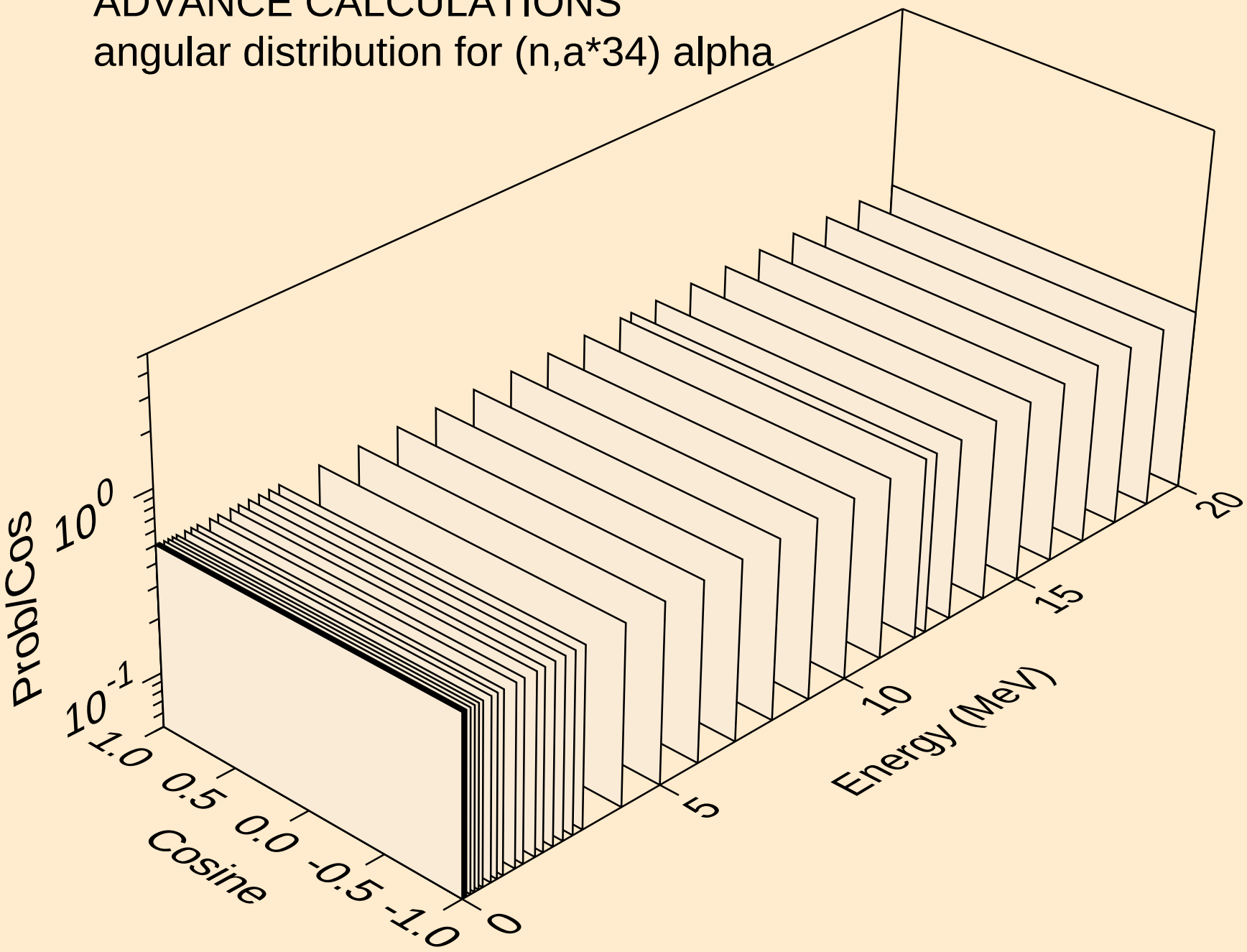
ADVANCE CALCULATIONS

angular distribution for (n,a*33) alpha



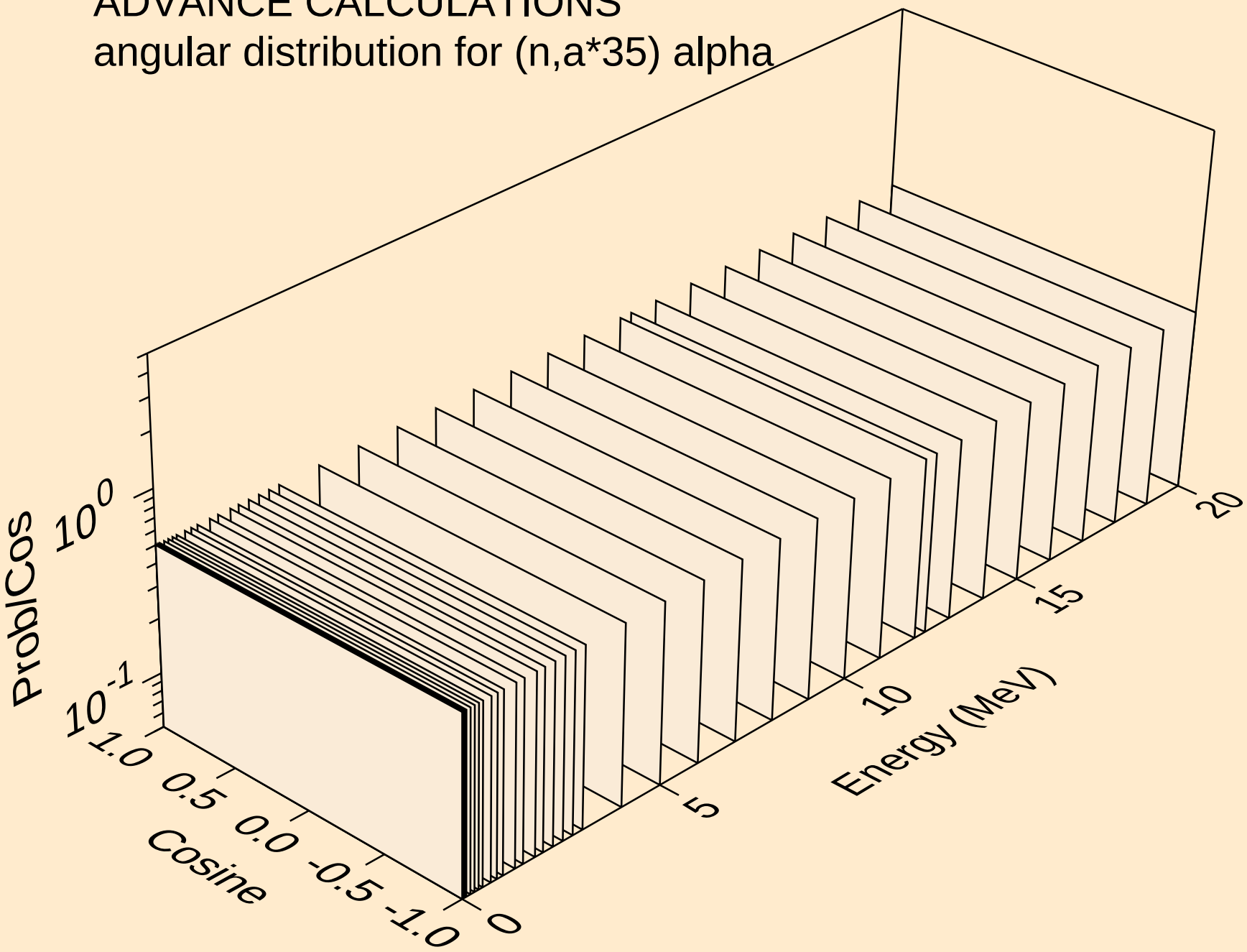
ADVANCE CALCULATIONS

angular distribution for (n,a*34) alpha



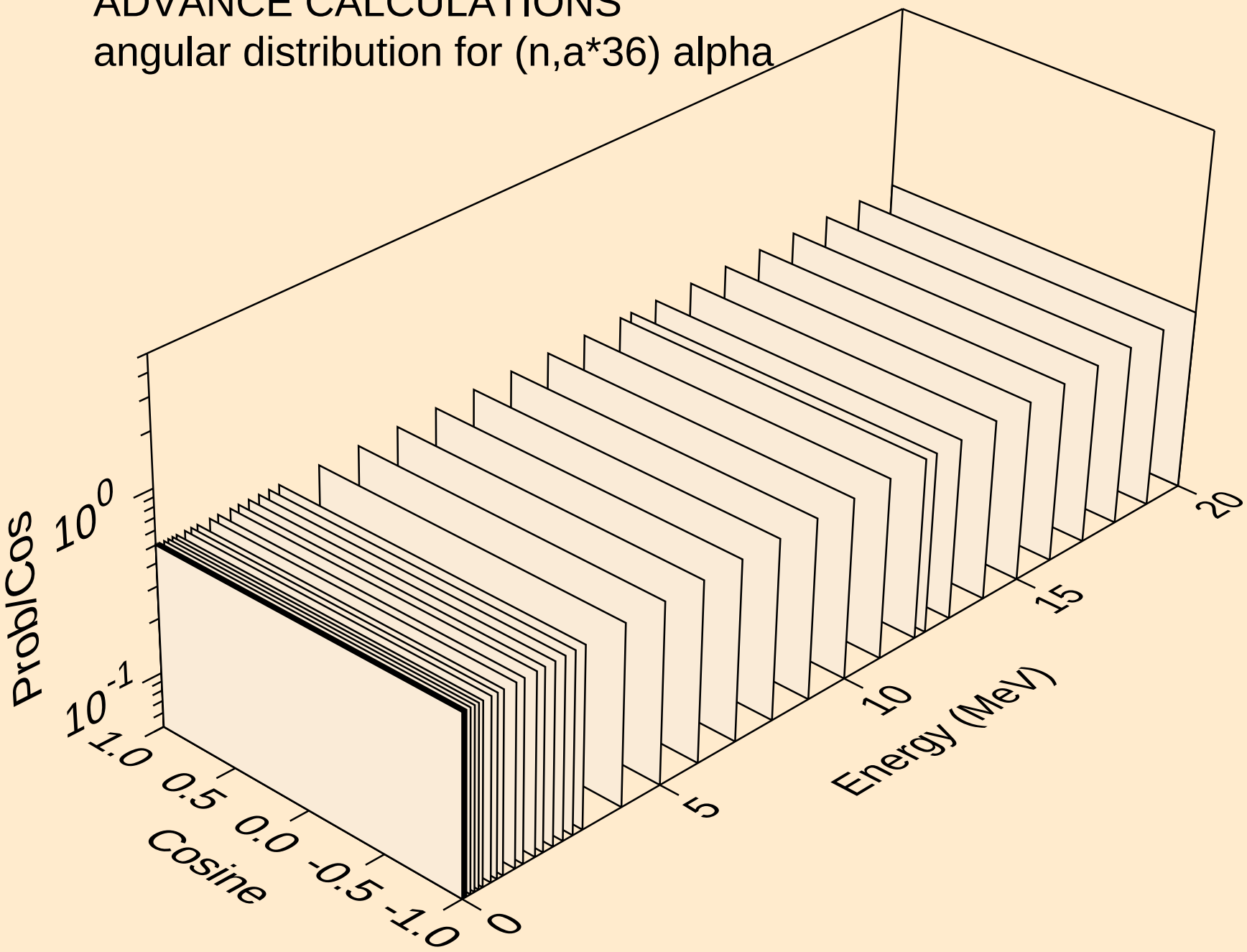
ADVANCE CALCULATIONS

angular distribution for (n,a*35) alpha



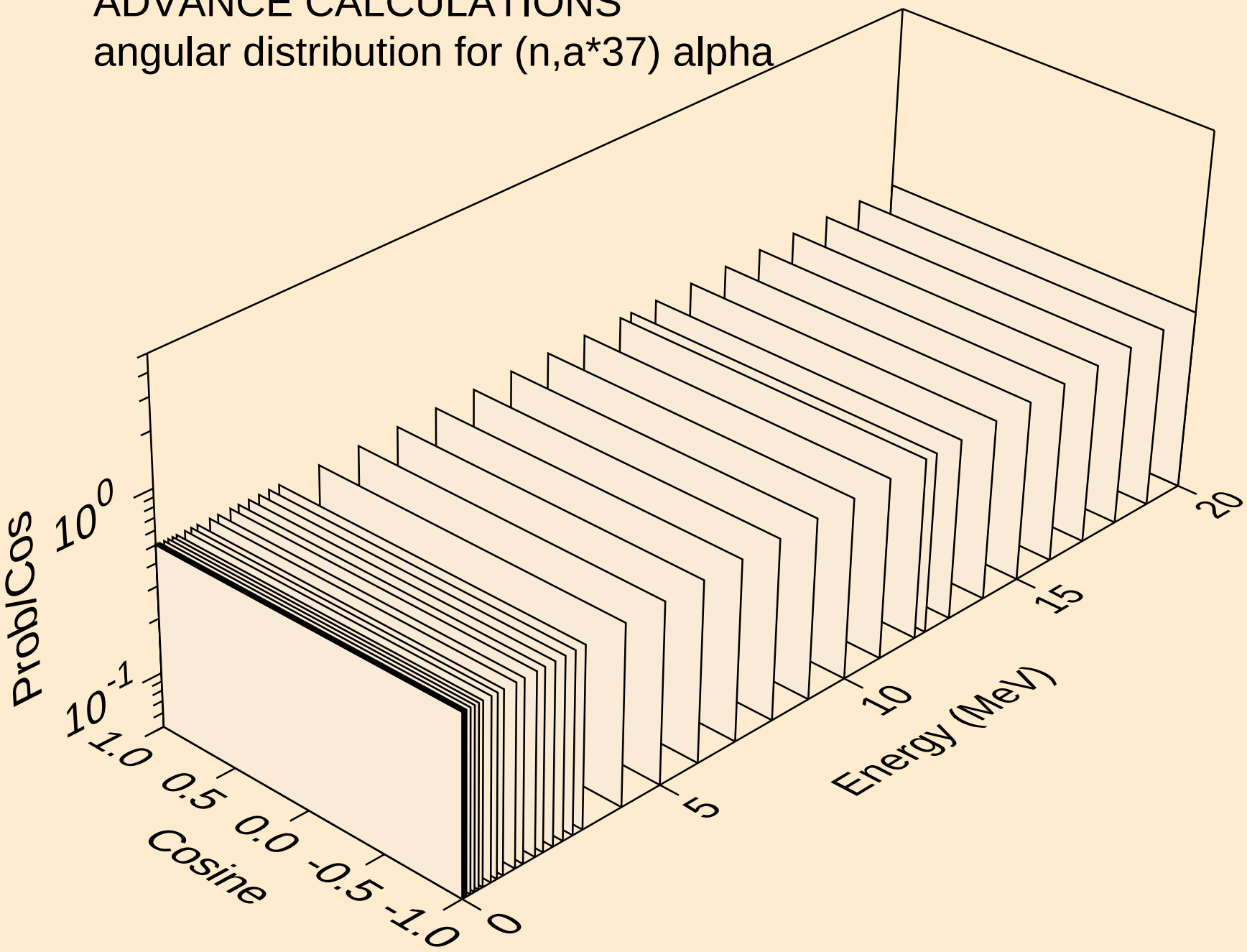
ADVANCE CALCULATIONS

angular distribution for (n,a*36) alpha



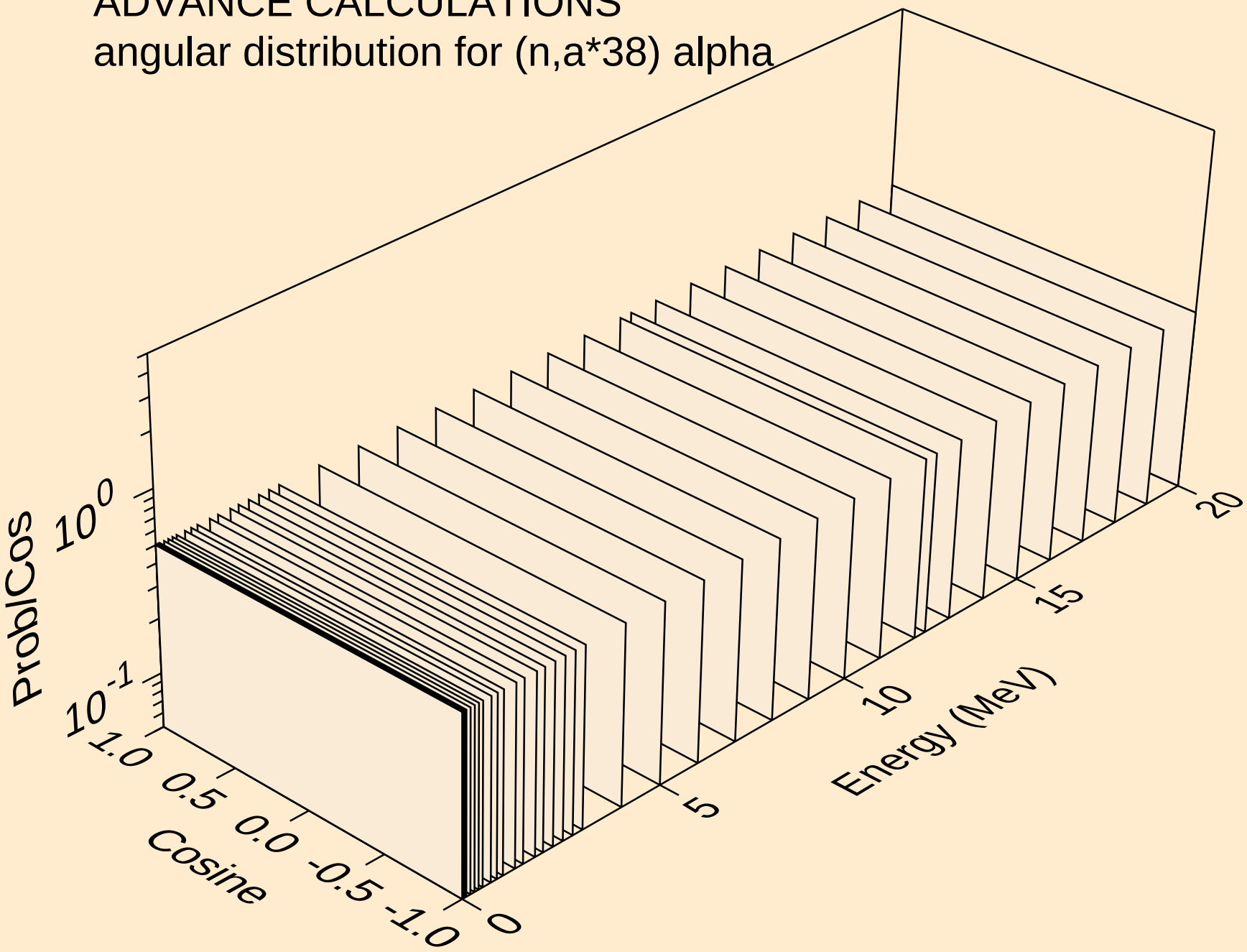
ADVANCE CALCULATIONS

angular distribution for (n,a*37) alpha



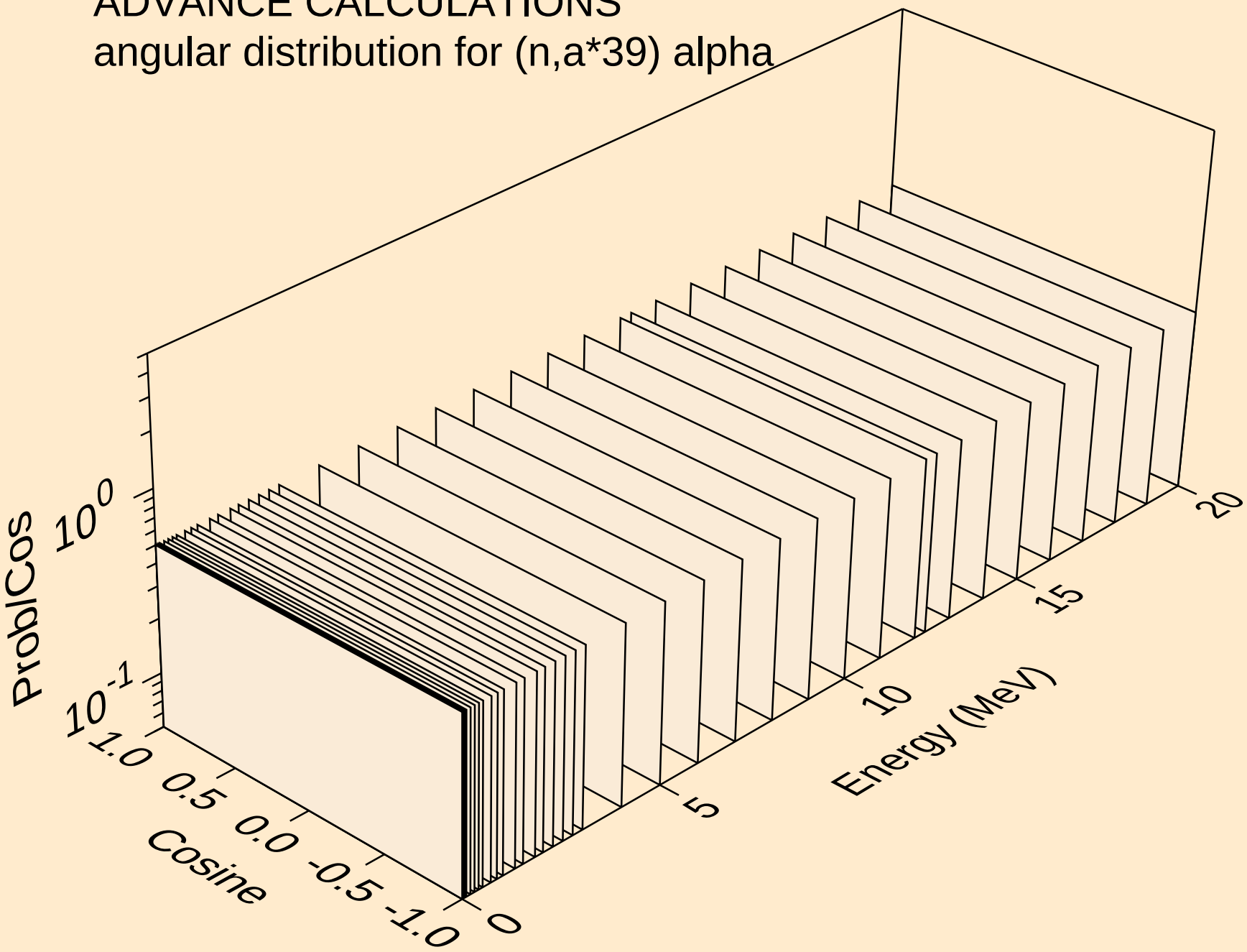
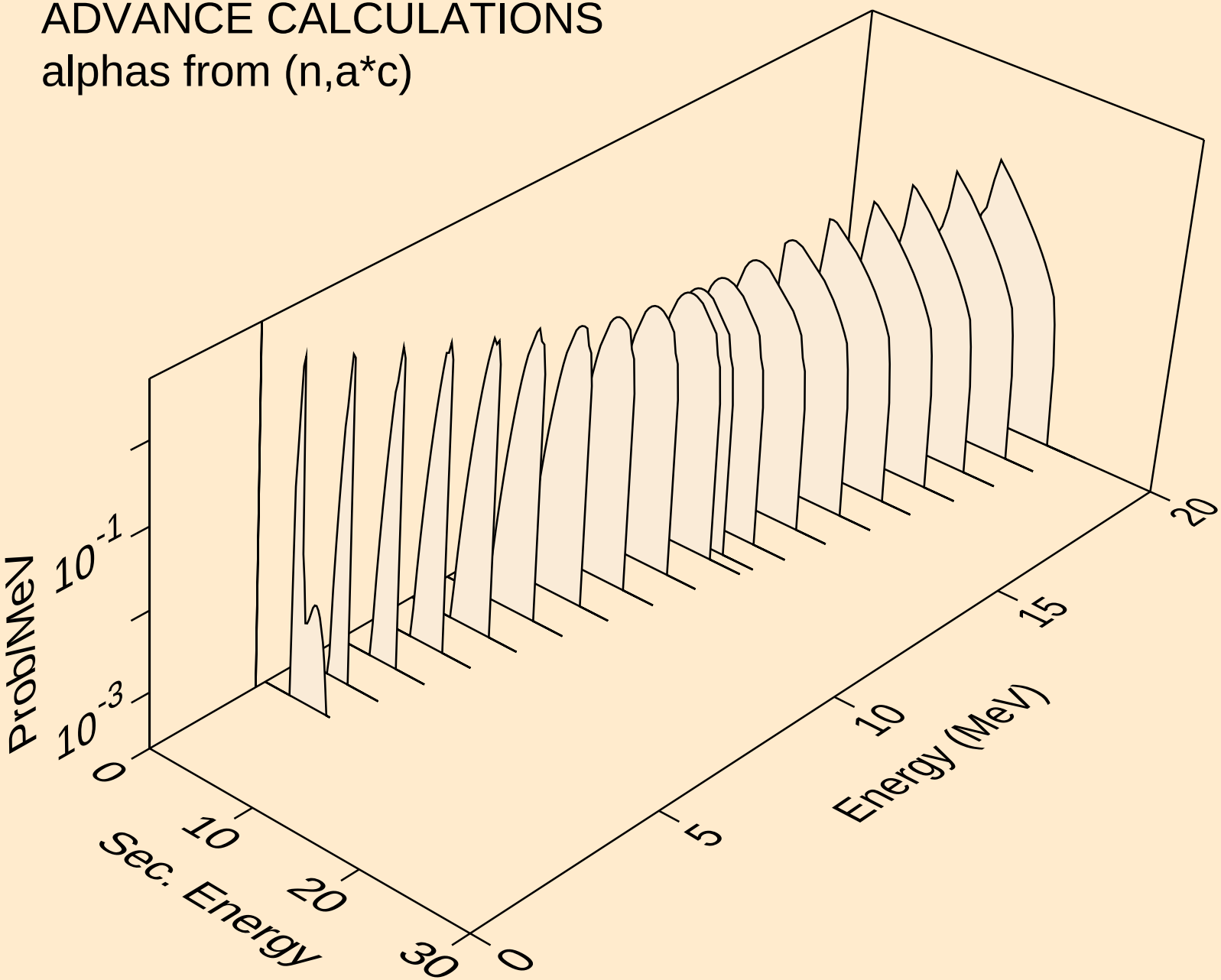
ADVANCE CALCULATIONS

angular distribution for (n,a*38) alpha



ADVANCE CALCULATIONS

angular distribution for (n,a*39) alpha



ADVANCE CALCULATIONS
alphas from (n,a*c)